

50 CENTS

CONSTRUCTION

METHODS AND EQUIPMENT

August 1954



A MCGRAW-HILL PUBLICATION

BUDA DIESELS

Money Makers in
ANY Equipment

Give You 3 Big Advantages

1. **BIG POWER**—12 to 16% more displacement means greater usable horsepower—the heavy duty, slugging and greater reserve power that means more production.
2. **HIGHER TORQUE**—up to 14% higher torque at normal operating speeds—gives greater lugging ability—less shifting—faster trips—greater operating economy.
3. **LONGEST LIFE**—Buda Diesels are averaging 6000 hours and up before overhaul in toughest service. Heavy duty construction—clean, simple design...controlled turbulence combustion with lower peak pressures means longer operation with less maintenance cost.



SCRAPERS
Buda Diesels' Big Power and higher torque in the economical operating range pays off in more yardage at lower oil around cost.

SHOVELS
Loading Shovel and Dragline builders choose Buda Diesels for stamina, operating economy and maintenance-free operation.



CRUSHERS
Buda Diesels' heavy duty design big displacement and fuel-saving combustion system guarantee longer operation with less maintenance at lowest all around cost.

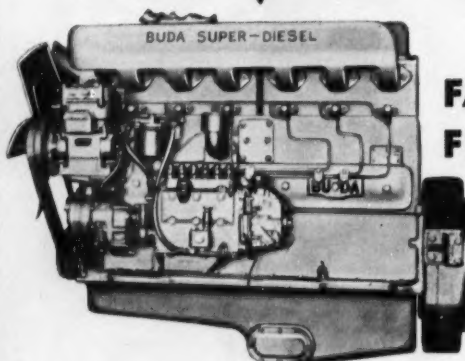
BUDA

Division of Allis-Chalmers Manufacturing Co.
Harvey, Ill.



Manufacturers of Material Handling Equipment, Lifting Jacks, Maintenance of Way Products, Earth Drills and Diesel and Gasoline Engines

A Complete Line

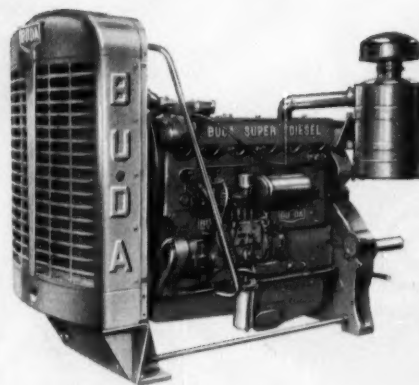


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POWER UNITS

21 Models
5 to 510 HP



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FOR EVERY NEED*



B.F. Goodrich



All-nylon tires end tire failures for rock products company

TRACY Rock and Gravel Company trucks are scheduled to make the round trip between quarry and crusher in 8 minutes. Such close timing is necessary so that this Tracy, Calif., firm can keep its output up to the demands of the construction industry. Setting the pace is one thing, maintaining it another.

Tires broke and treads separated under

30-ton payloads. Some tires lasted only 100 hours. Valuable time was lost. Maintenance costs soared. But B. F. Goodrich *all-nylon* tires solved these serious problems, Chief Mechanic W. S. Floyd reports. After 2 years on the job, "they've never been off the rims!"

Nylon is stronger than ordinary cord materials, can withstand double the impact. *All-nylon* tires last far, far longer,

put an end to premature tire failures.

Tracy uses *all-nylon* Super Traction tires because the wide tread gives greater flotation. The *all-nylon* Universal tread gives full traction in forward or reverse. And the *all-nylon* Rock Logger tire resists rock cuts.

B. F. Goodrich *all-nylon* tires will work for you as they have for the Tracy Company. (Rayon construction at lower prices.) See your B. F. Goodrich retailer today. His address is listed under Tires in the Yellow Pages of your phone book. Or write The B. F. Goodrich Company, Tire & Equipment Division, Akron 18, Ohio.

Specify B. F. Goodrich tires when ordering new equipment



ALL-NYLON SUPER TRACTION tires pull through grueling time schedule under 41-ton gross weight.



UNIVERSAL TREAD guards against dangerous slippage, keeps trucks moving. Maintenance costs are cut.



COMMENT

from the BUTLER ENGINEER ... of automation and the moon

We're not quite ready to raise the curtain on Act I of our new play "Complete Automation" but I can give you a bit of a sneak pre-view.

I wish there were another word stronger than "complete" in relation to automation. "Completely automatic" implies push-button control, especially in relation to Ready Mix Plants.

And this *is* a new Butler Ready Mixed Plant whereof I speak but it will be as far beyond push-buttons as a space-ship is beyond the DC-3. Never been anything like it before . . . I said to one of my lads in the engineering department,

"You know, there's only one step left in electronic, automatic batching. That would be to make a psychic batcher that reads the operator's mind".

Said he, "Nope, boss. This new one's better. If the operator had a hangover he'd raise hell with a psychic plant!"

He's right! This new Ready Mixed set-up is absolutely, completely, positively fool-proof under any circumstances. And fast? The sonic barrier in batching is gone, along with the human element.

I'll tell you more — just as soon as my boss will let me.

There's another highly interesting Ready Mixed job we're doing. In automation it's at the push-button level, but . . . when the batchers are up to weight an electronic memory holds the number and composition of the batch, the date and the exact time of day . . . Then, during the *discharge cycle* — in three seconds — the device *types* all that information it stored in its memory. Note that the record is made during batch *discharge*. No time lost from production. *When there's a Ready Mixed Plant on the moon — it will be built by Butler.*

The Butler Engineer

BUTLER BIN COMPANY
WAUKESHA, WISCONSIN

Volume 36
Number 8

CONSTRUCTION METHODS AND EQUIPMENT

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San Francisco: L. L. WISE
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Layout: NELLE FITZGERALD
Assistant: J. BELARDETTI

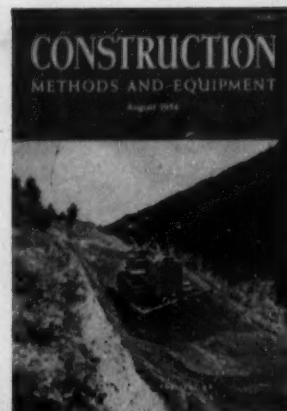
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On the Cover

Mountain scenery is routine to tractor operator L. R. Mirehouse directing his Gar Wood dozer-equipped Allis-Chalmers HD-15 crawler on an 18-mi road relocation job made necessary by the construction of Palisades Dam in Idaho (CM&E Mar. 1953, p. 96). Contractors Dillsworth & Pumnea, Helena, Mont., excavated 352,000 yd of material, running about 40% broken rock. HD-15 sloped cuts, did secondary dozing.

EARTHMOVING REPRINTS: You can get reprints of CM&E's popular series of articles entitled "Earthmoving—An Art and a Science." Here are 64 pages of valuable excavating and earthmoving data, prepared by authorities in their field, useful to contractors, estimators, foremen and operators. Single copies are available at 50c each; 10 copies or more at 35c each.

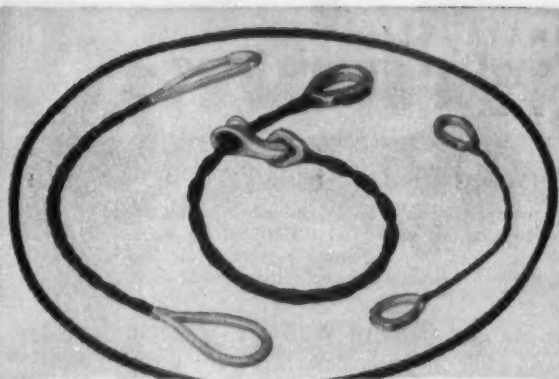
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Braided Wire Rope Slings

Materials handling—from unloading a car of pipe to handling a 200-ton generator—requires a wide variety of safe, economical, easy-to-handle slings. The sizes and types of Macwhyte Slings are practically unlimited—they are available in many standard designs or can be custom-made. Bulletin lists and illustrates many types and body styles in Round-Braided, Flat-Braided and Single-Part Slings. Specify Bulletin 5308.

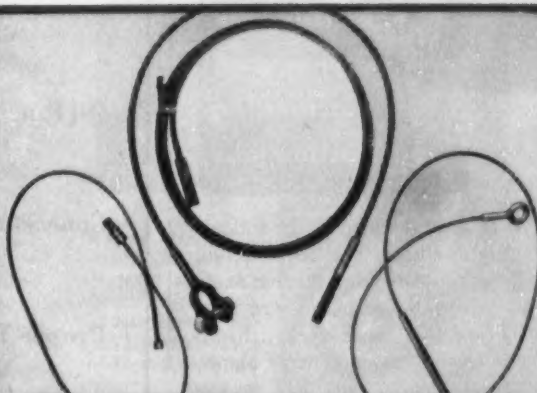
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from this wide variety
of wire rope products
means —

LONGER and SAFER SERVICE



Wire Rope

Proper selection of wire rope is most important in getting safe, economical operation. To provide the right ropes for each of the many kinds of equipment, Macwhyte Company makes a thousand and one types and sizes. Included are PREformed Internally Lubricated Ropes, Galvanized Ropes, Stainless Steel, and Monel Metal Ropes. Request Catalog G-16.



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Pay Dirt in This Issue

August, 1954

Folsom Dam Construction in Stride 54

In spite of delays due to floods and other conditions, concrete is being poured at rate of 25,000 yd per week. Downstream gravel plant delivers aggregates in big volume, and huge mix plant turns out refrigerated batches.

Bolts Secure Slab to Canyon Wall 58

A huge rock slab, 19 ft thick, 180 ft long and 120 ft high hangs directly above the Nevada valve house of Hoover Dam. To keep it there, nearly 350 bolts, 2-in dia and up to 33 ft long, are placed on 7½-ft centers.

Trailer Shops Sprout on Turnpike 66

Highway trailer vans become nucleus of efficient equipment maintenance centers—carry tools and supplies to field, remain as shop buildings and warehouses.

Electricity Stiffens Clay Fivefold 70

Electro-osmosis increased shear strength of soft, wet clay to firm up treacherous material and change a difficult excavation into an easy one, in spite of 65-ft depth.

Oil Pipeline Laid in a Hurry 62

A 30-in dia pipe makes a big job, laid 640 miles, under deep water, and 200 road, rail and river crossings.

Concrete Mixing and Placing 112

Plants for mass concrete: Specifications will dictate the type of plant set up; usually a new one gets nod.

Proper Tools Make it Easier 134

All parts, big and little, get preferential treatment quickly when the right tool is on hand to do the job.

Gunned Concrete Restores Reservoir 138

Shifted slabs were aligned, voids and cracks filled, and entire interior surface then covered with 3-in coating.

Wall Beats the Clock 142

Trained teams, pre-placed materials, prefabricated panels make record of enclosing 22-story building in 10 hr.

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NEXT MONTH

A high spot, maintenance-wise, on the Ohio Turnpike is the field operation by joint-venture contractors, Peter Kiewit Sons' Co. and Condon-Cunningham Co. on an 8-mile section near Fremont. Read how they do it—in September.

Prefabrication COMES OF AGE!



218 Precast, Prestressed Deck Girders, with Spans up to 63', Factory-made for Garden State Parkway Bridges

• Precasting continues its rapid spread, as today's building costs intensify the quest for sound economies. The range of concrete prefabrication is greatly widened by prestressing, which makes possible lighter members and longer spans, for buildings and bridges, with substantial savings in concrete and steel. Prestressing is really pre-testing, because a member is subjected to greater loads in fabrication than it takes in the field.

Factory-made, prestressed deck girders, 218 in number, up to 63 ft. in length, for eight bridges on New Jersey's Garden State Parkway, highlight this trend. Designed by GANNETT FLEMING CORDDRY & CARPENTER, INC., Harrisburg, Pa. and manufactured by FORMIGLI ARCHITECTURAL STONE CO., Williamstown Junction, N. J., every member is field practical, for fast erection with minimum supervision.

Cost in place invites comparison . . . inherent resistance to fire, weather, rust and rot, with no painting and little or no maintenance, mean further economies . . . marking the coming of age of concrete prefabrication.

For school and residential, commercial and industrial construction, factory-made concrete columns, spandrel beams, girders, roof slabs, provide fire-safety, structural stability and pleasing appearance of concrete, at marked cost advantage.



ASSEMBLY-LINE METHODS speed production in 320'-long pretensioning bench at Formigli's Williamstown Jct., N. J. plant, where 5 bridge deck girders were cast at a time and steam-cured. Facia members were post-tensioned at Formigli's Berlin, N. J. plant. 'INCOR'® 24-HOUR CEMENT

produced 4000 psi stripping strength in 18 hours, setting tempo of operation, assuring maximum output at minimum production cost . . . with high ultimate strength and durability, hallmarks of America's FIRST high early strength portland cement.

*Reg. U.S. Pat. Off.

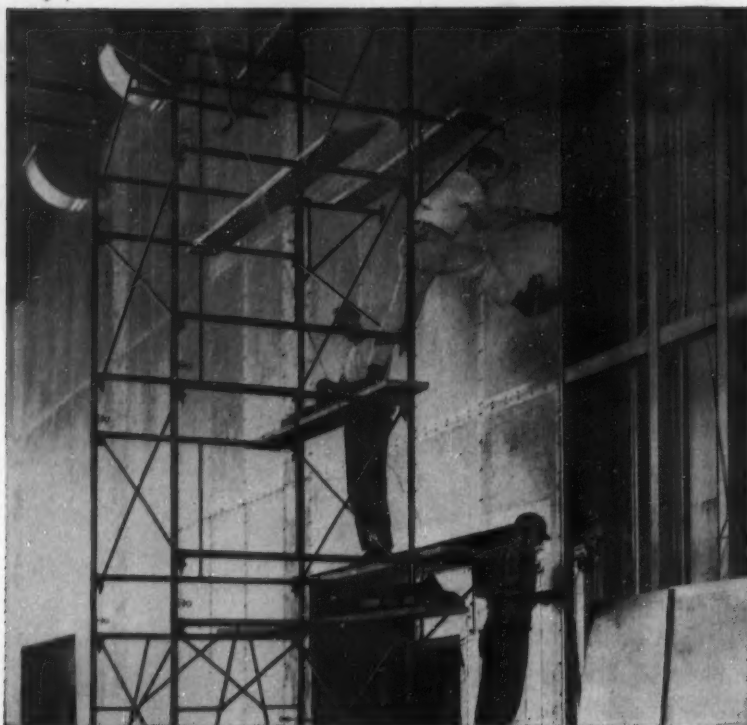


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LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 18 MODERN MILLS, 136,000,000 SACKS ANNUAL CAPACITY



Saves 75% of fastening time by anchoring sheet steel wall with fast, easy **Ramset** system

About 20,000 individual fastenings were needed to anchor 4' x 8' 12-gauge perforated steel sheets to steel beams, to wall the paint hangar at the recently completed airplane plant of North American Aviation Corp., Columbus, Ohio. The wall is required to permit adequate ventilation of 47,250 square feet of space, with a change of air every three minutes from air intakes and exhausts located on opposite sides.

Using RAMSET JOBMASTER fastening tools and Tru-Set drive pins, fastenings were made at a rate better than 50 per hour per man, or 1,200 per day for a three-man crew. This was at least 4 times faster than old-fashioned, conventional methods of drilling

and setting studs in the beams. Not only was the work completed far sooner, but a substantial cost-reduction was realized.

Similarly, RAMSET SYSTEM saves money and time on almost any job of fastening to steel or concrete for maintenance, modernization or new construction. Anchoring can be done in split seconds into the hardest concrete, or into mild steel up to 1" thick, with the proper selection of tools, fasteners and power charges from the versatile RAMSET line.

Ask your RAMSET dealer how you can profitably apply RAMSET SYSTEM to your own work, or write us for details and *Specification Manual*.

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★ JOB TALK ★

... About Methods



Digging Circles

PRACTICALLY AUTOMATIC TRENCHING has cut excavating costs for grain storage bin foundations to a new low for the Green Construction Co., Pampa, Tex.

Small grain storage bins (holding 3,000 bu) have been erected by the thousands through the Midwest, and the most time-consuming part of their erection has been excavating for foundations, usually done by hand. Green Construction Co. won a contract to build 150 bins in southern Kansas.

Each foundation trench had to be 18 ft in dia, 6 to 8 in. wide and 12 to 20 in. deep. It holds the steel base or anchor ring of the bin, upon which wall sections and roof are secured. Hand excavating, at going labor rates for the area, cost an average of \$23 per circle.

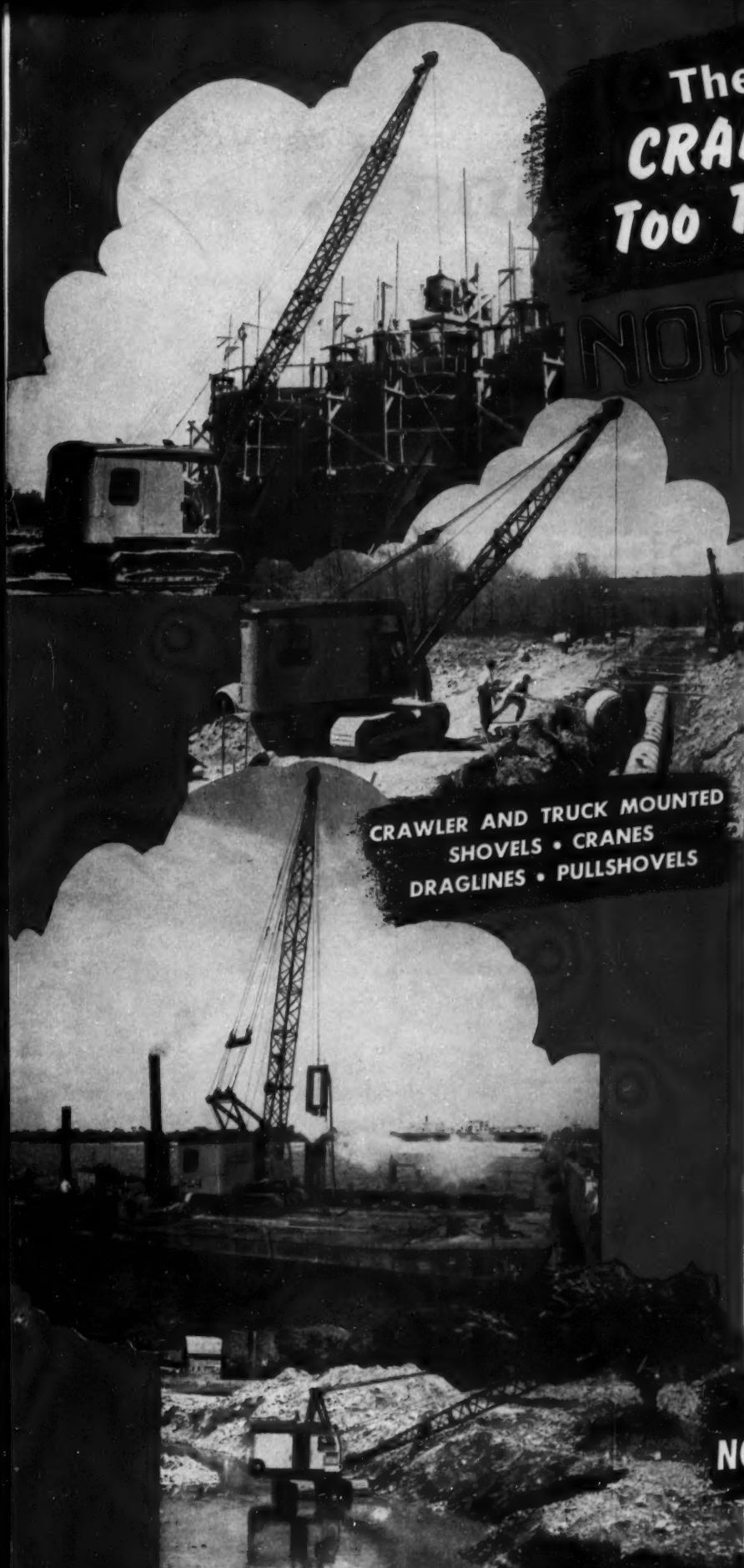
The contractor soon brought in a small trencher, a model of Ditch Witch, manufactured by the Charles Machine Works, Perry, Okla. The little ditcher was hooked to two 9-ft radius rods from the center of the circle to be excavated and set to dig its way around, cutting a foundation trench of correct depth and width as it traveled around its orbit.

One operator, with no previous experience, handled the machine so well that labor costs dropped to 96c per circle and Contractor Green estimates that the Ditch Witch paid for itself in saved labor with about 54 circles.

Bolt Buildings Now

The use of high-strength bolts to replace riveted or welded construction in the erection of struc-

(Continued on page 16)



There is no
CRANE PROBLEM
Too TOUGH for a

NORTHWEST

● It isn't the job or the parts of a job that you know about that eats up cost. It's meeting the unexpected. That's the thing about Northwest Cranes. There is no crane problem too tough within their rated capacity. Northwest Crawlers get you there — and back. They are "sea going" on barges if need be. They work on inclines. They handle the tricky jobs with high booms or they will lay the boom out flat for reach.

A choice of Boom Hoist equipment helps you meet any condition and permits one, two or three load lines. Smooth swing, smooth control — assure fast spotting — and perhaps most important of all, conversion is easy when work as a crane is done. It can be quickly converted in the field to a Dragline, Shovel or Pullshovel. Remember — no crane job *too tough*! Ask for complete details.

**NORTHWEST
ENGINEERING COMPANY**

1503 Field Building
135 South LaSalle Street
Chicago 3, Illinois

**CRAWLER AND TRUCK MOUNTED
SHOVELS • CRANES
DRAGLINES • PULLSHOVELS**

Ask about the
NORTHWEST TRUCK CRANE



Announcing...

revolutionary new diesel fuel system...

as simple as gasoline carburetion and ignition

Exclusive PT Fuel System now standard on all Cummins Diesels

- Drastically reduces maintenance costs
- All mechanics can understand and service it
- Pump weighs only 13 pounds—system has no racks, check valves, metering plungers, discs, floats, etc.— does not have to be timed to engine
- Adaptable to all Cummins Diesels built since 1932

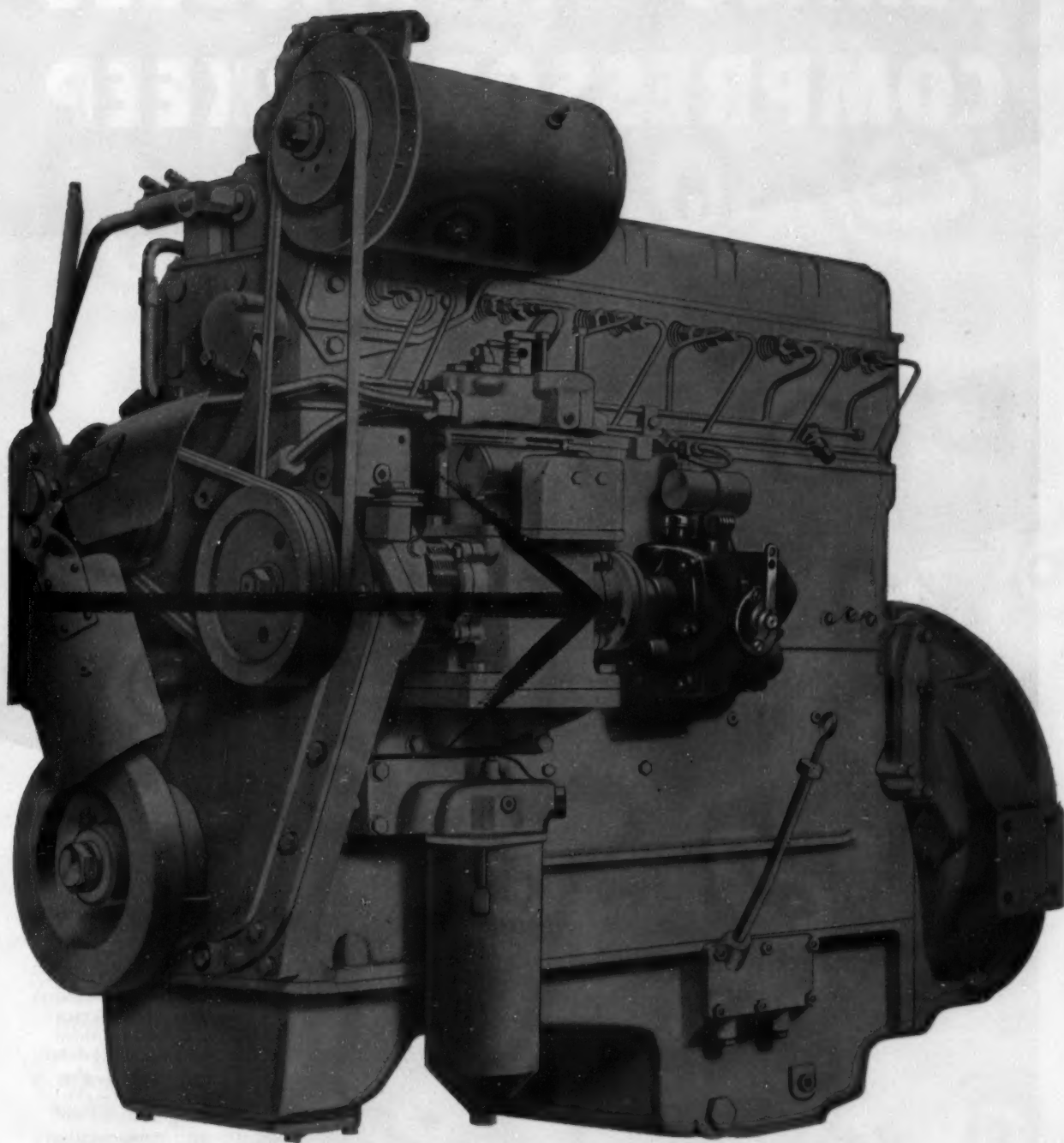
Write for your copy of descriptive folder
"Cummins PT Fuel System."



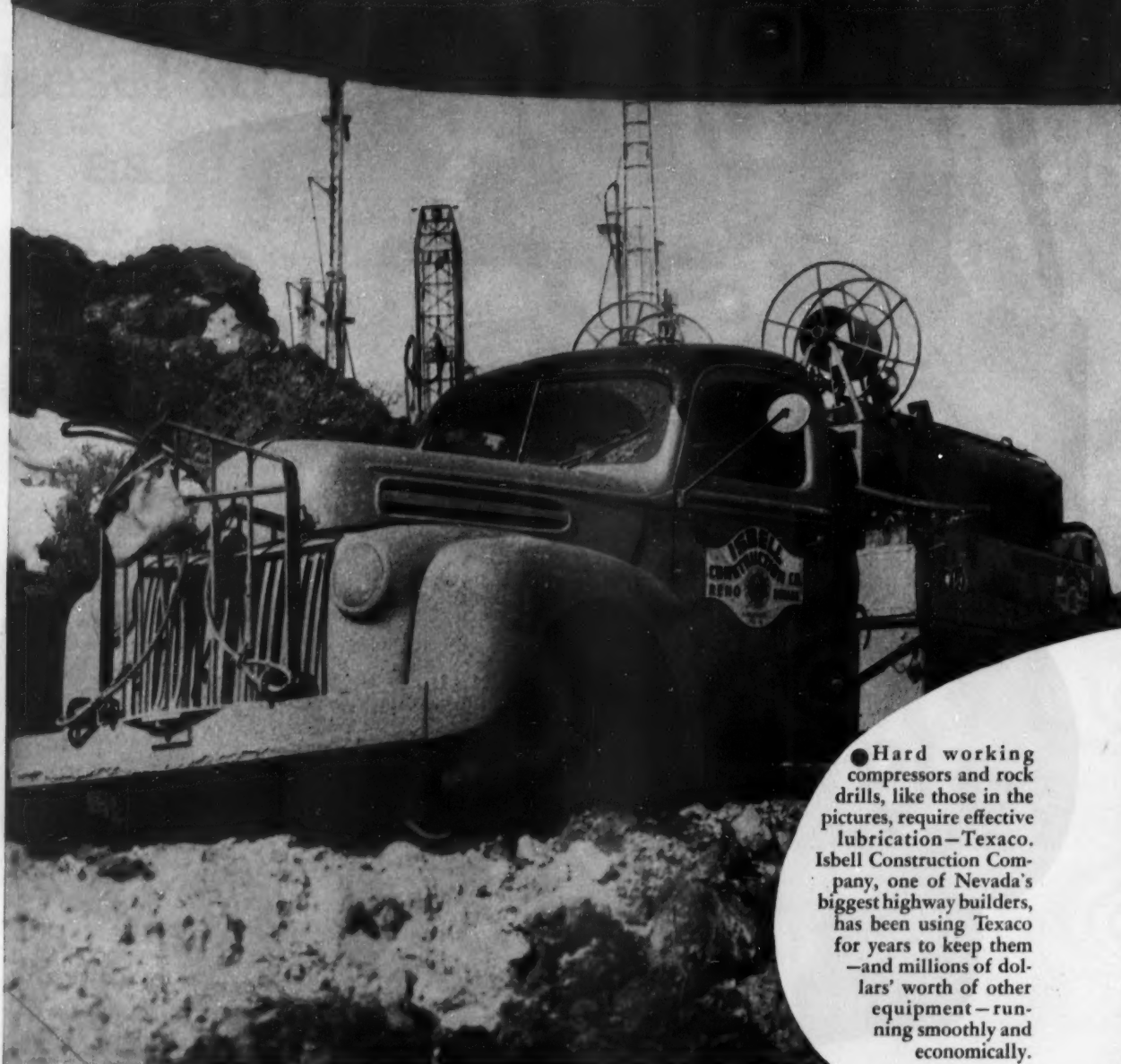
Cummins

Engine Company, Inc., Columbus, Indiana

Leader in rugged, lightweight, high-speed diesels (60-600 h.p.)



TEXACO HELPS ISBELL COMPRESSOR UPKEEP

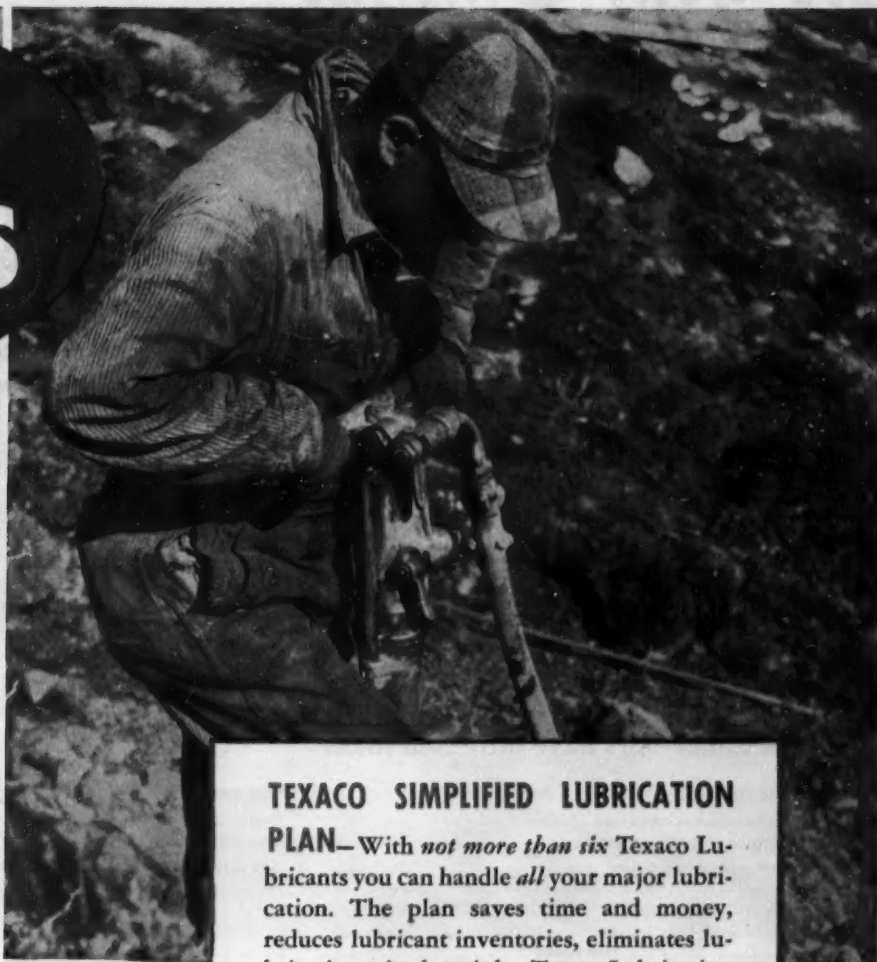


● Hard working compressors and rock drills, like those in the pictures, require effective lubrication—Texaco. Isbell Construction Company, one of Nevada's biggest highway builders, has been using Texaco for years to keep them—and millions of dollars' worth of other equipment—running smoothly and economically.



TEXACO

CUT COSTS



TEXACO SIMPLIFIED LUBRICATION

PLAN—With *not more than six* Texaco Lubricants you can handle *all* your major lubrication. The plan saves time and money, reduces lubricant inventories, eliminates lubrication mistakes. Ask a Texaco Lubrication Engineer all about it.

Like compressor operators everywhere, Isbell Construction Company, Reno, Nevada, uses Texaco air compressor oils to keep maintenance costs low and operating efficiency high. Choice of oil is determined by the size and type of compressor and the job's particular operating conditions.

Isbell is able to match oil to compressor because there is a *complete line* of Texaco air Compressor Oils—assuring fine performance whatever the type and size of compressor, whatever the operating conditions.

For rock drill lubrication, Isbell uses *Texaco Rock Drill Lubricant EP*. It gives outstanding protection against wear, guards against rust whether drills are running or idle, assures longer drill life, less maintenance expense.

Let a Texaco Lubrication Engineer help you increase equipment efficiency, lower maintenance costs. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

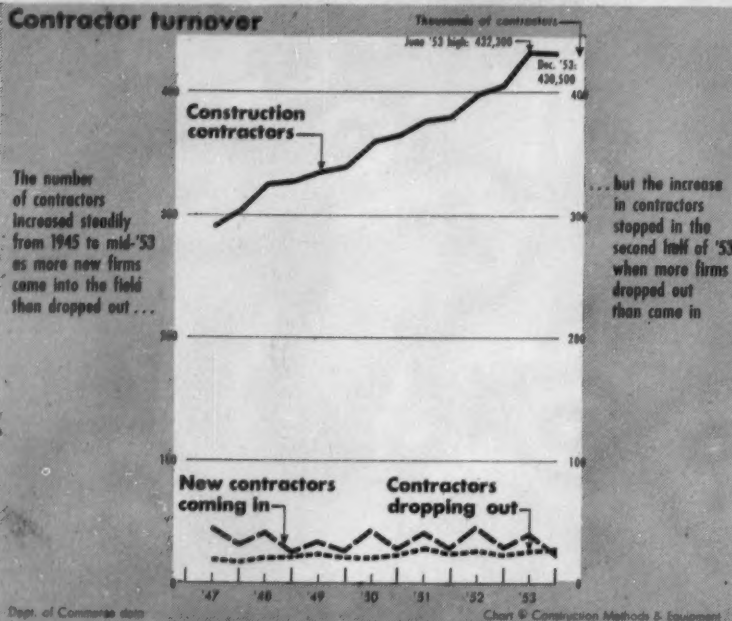
The Texas Company, 135 East 42nd Street, New York 17, N. Y.

Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT

It's Your Business . . .

Contractor turnover



**Accent Is on
Fewer Firms,
More Capacity**

**More Contractors Drop
Out, Fewer Coming in**

THE MUSHROOMING OF general and subcontractors in the construction business since 1945 came to a halt in the second half of 1953 after climbing to a record high of 432,300 firms in the field as of June '53. By December, this number dipped 0.4% to 430,500. While this was still very close to the June

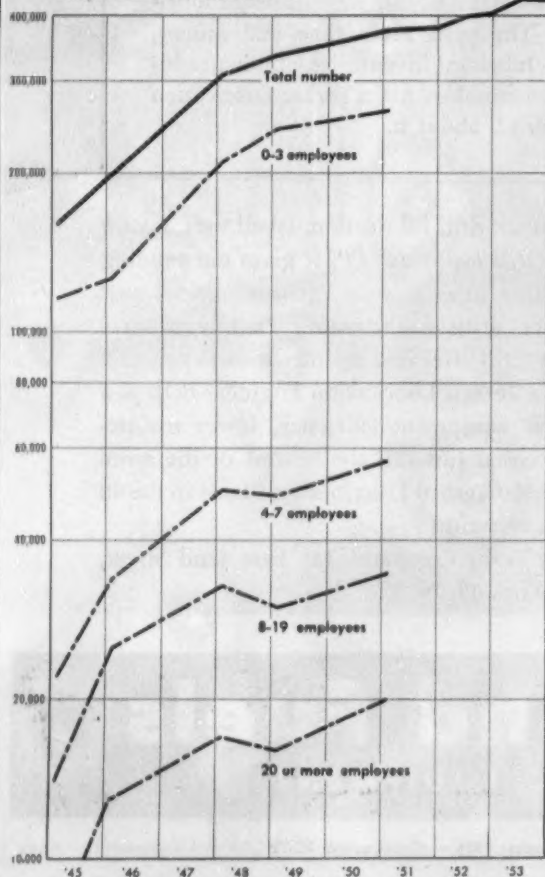
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Large competitors have increased faster

Size measured by number of employees

All construction contractors including trades subcontractors

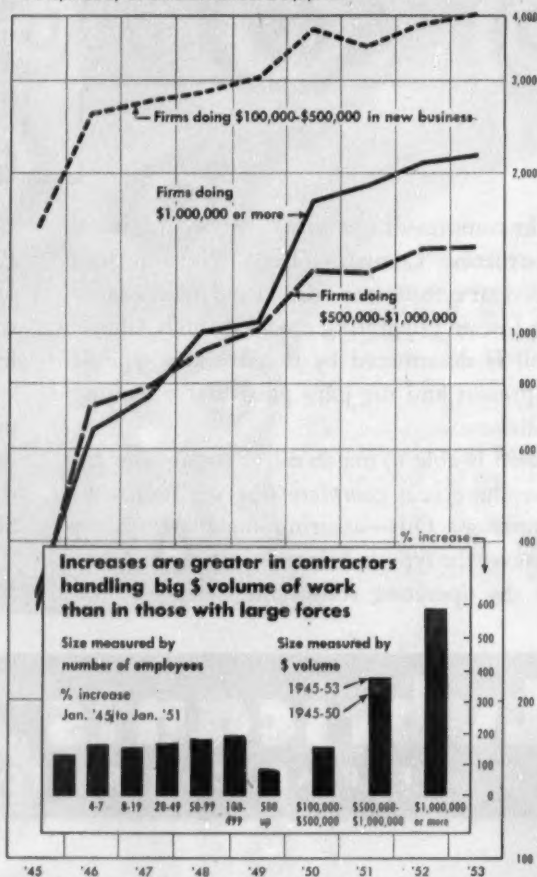
—Department of Commerce data




Size measured by dollar volume

Heavy construction contractors doing \$100,000 or more per year

—As reported by Construction Methods & Equipment





**JOB.....OHIO TURNPIKE
POWER.....CAT* D17000
ENGINE AGE...SEVEN YEARS
REPAIRS..ONE FUEL PUMP!**

Near the western end of the 241-mile Ohio Turnpike, a fleet of Caterpillar equipment is rushing to completion a 14-mile section for V. N. Holderman & Sons, Inc., Columbus.

One piece of equipment is a Bucyrus-Erie dragline powered by a venerable Caterpillar D17000 Diesel. It helps explain why Holderman has so much Cat equipment.

The D17000 is seven years old. In that time, the extent of repairs to this hard-working engine has been one fuel pump!

The entire fuel system of Caterpillar Diesels is fool-proof. There is not one operating adjustment! Replacing injection pumps is simplicity itself. No regulation in the field is necessary because each is permanently adjusted at the factory. They are made to precision tolerances—the barrel and plunger fit is measured in millionths of an inch. That's why all these pumps are completely interchangeable.

Examined closely, the fuel transfer pump alone speaks volumes about the thoroughness of Caterpillar Engine design. The pump is of gear type and has enough capacity and suction lift to assure a complete supply of fuel to the injection pumps. It is completely sealed against dirt.

And, of course, the entire fuel system is protected by a series of filters and seals unmatched by any other diesel engine. Yet all Caterpillar Engines work on common furnace oil — and they do it without fouling.

This attention to detail in the fuel system is characteristic of all parts in Caterpillar Diesels. It's the reason why these engines are ready to work when you are. It's the reason so many Cat Engines are still on the job after delivering 100,000 hours of profitable performance!

Avoid trouble. Follow the example set by road building leaders. Specify Cat Diesels when you repower or buy new equipment. All leading equipment manufacturers can supply them with their machines.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

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**NATIONAL LEAD CO.
BAROID SALES DIVISION**

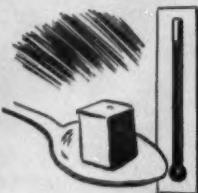
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what makes

**THE LONG-LIFE LUBRICANT FOR
YOUR MULTI-PURPOSE USE . . .**



WATER RESISTANCE—The ability of Bentone greases to resist washing action is excellent. Bentone greases will take up water by absorption or emulsification, but will not lose consistency. Bentone greases are not subject to hydrolysis and thus do not break down and separate into two phases in the presence of water.



HEAT STABILITY—The consistency-temperature characteristics of Bentone greases are far superior to those of conventional greases. They will not melt below the decomposition point of the oil.



METAL ADHESION—The adhesion of Bentone greases to moving metallic surfaces is one of their best properties—far superior to all conventional greases. A grease may have many excellent properties, but if it fails to adhere to moving metallic or other surfaces, it is useless.



LONGER SERVICE LIFE—The mechanical and chemical stability of Bentone greases is excellent, with superior resistance to bleeding and separation, with wear characteristics comparable to those of the best grease products.



WRITE FOR FREE BROCHURE—This Bentone* 34 fact book tells you what it is, how it's made, how it gels, and why Bentone greases are superior for all your multi-purpose use. Write for your personal copy today.

*Call your nearest Bentone*34
grease distributor today*

FOR COMPLETE INFORMATION ON BETTER LUBRICATION

Bentone*34 greases *better* *for longer trouble-free service life!*



HERE'S WHAT BENTONE* 34 GREASE USERS SAY . . .

"We are finding the Bentone grease very acceptable for lubricating our heavy equipment, using it on chassis, wheel bearings, reciprocating bearings, and the lubricated crawler mechanisms."

"The Bentone grease appears to have outstanding resistance to oxidation, and does not break down under heavy shock loads."

"Its superior water resistance protects the bearings against rusting and corrosion from water which frequently enters the bearings in service."

Bentone 34 multi-purpose lubricants can save you time and money, too, where dust, water, steam, extreme temperatures and extreme pressures are a problem.



Deli Boy
TRADEMARKS
REGISTERED
U. S. PAT. OFF.

BENTONE*34

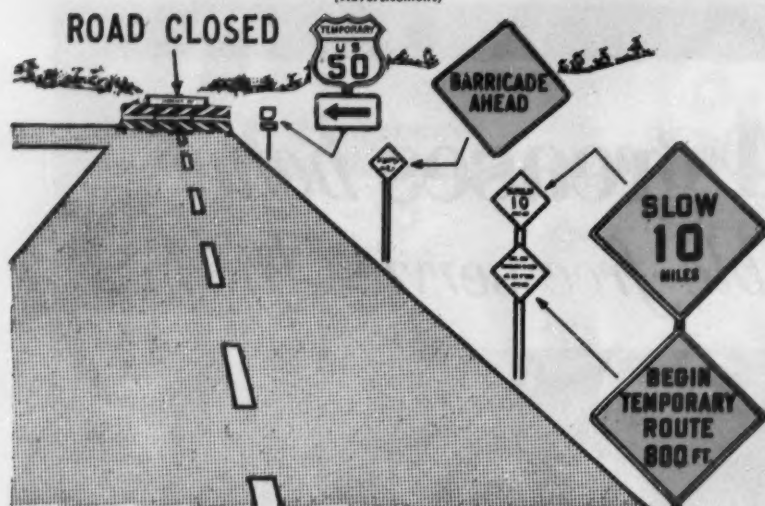
THE NON-SOAP GELLING AGENT

NATIONAL LEAD COMPANY

BAROID SALES DIVISION

★ P. O. BOX 1675 ★ HOUSTON 1, TEXAS

(Advertisement)



Maximum safety with minimum delay must be provided for highway users by the contractor when he arranges a temporary traffic route during highway construction. Well-placed, legible signs and barricades effectively control today's fast driver.

How to Protect the Traveling Public When Constructing Roads (No. 1 of a series)

DETOUR — Signs slow down and reroute drivers on approach to closed section

"ROAD CLOSED—BEGIN TEMPORARY ROUTE." When the highway contractor erects these signs, he creates a double obligation: that of protecting highway users against accidents and undue delays and his own organization against possible damage claims.

Make It Easy for Them

• Careful planning and execution of a few important details will do the job right and take a big load off the contractor's mind. First, he plans every step of the way so that no operator of a vehicle becomes confused as he approaches the detour or while traveling over the temporary route. As long as the driver knows definitely what to do next in plenty of time, he seldom gets into trouble—or causes the contractor any inconvenience through damage claims.

• Make every effort to inform, guide and protect the traveling public by the use of distinctive signs, easily understood control devices and barricades properly placed and marked. Each end of a section of road to be closed to traffic should be marked, lighted and posted with detour information that catches the eye and gets the driver to react safely.

The Approaches

• Warn the driver to slow down far in advance of the closed roadway section and to expect a change in route. The first traffic-control sign he meets should convey basic information in a few words, such as the double sign above which tells the driver to slow down to 10 mph and turn to a new route within 800 ft. This sign must be specific concerning what he has to do for his safety. Within the next 200 ft he comes to a second sign which states simply "Barricade Ahead". There can be no mistaking the meaning of the first two messages.

• Post a directional arrow and temporary route guide sign within 75 ft of the point of route change, clearly indicating the turn. If vehicle operators have to be advised of special road conditions, clearances and bridge capacities on the detour, be sure to post such information plainly along each approach.

The Signs

• Best warning signs are at least the standard 24x24-in. minimum in size mounted more than 30 in. above the crown of the road and 6 ft off the travelled lane. They should carry a black legend on a reflectorized yellow background and be mounted securely on sturdy posts.

• Purpose of barricades is to exclude all through traffic. They are the final control device before the motorist turns to the temporary route. Barricades are erected *entirely* across the travelled way, striped diagonally in contrasting colors, with the lighter color reflectorized. Broad rails should be used in the construction of substantial road blocks. A reflectorized "Road Closed" sign mounted on the barrier completes traffic control on the approach.

The Detour

The temporary route must:

- Completely bypass the closed highway section.
- Possess capacity to absorb and accommodate the majority of diverted traffic.
- Provide access to residences, business districts and other centers of public activity.
- Be clearly posted as a detour, together with route numbers, speed limits and warnings of hazards such as crossroads, clearances and bridge capacities.
- Be patrolled for necessary enforcement of regulations and be maintained regularly for surface irregularities, lighting and legibility of signs.

This article is the first in a Public Safety Series designed to reduce damage claims. If you would like a copy of this complete series, write to Loss Prevention Department, Liberty Mutual Insurance Company, 175 Berkeley St., Boston 17, Mass.

JOB TALK . . . Continued from page 6



tural steel framework for buildings and bridges is not entirely new. But the method is constantly undergoing some improvement so that the inherent strength of a good bolted joint and the powerful clamping force applied (producing high friction) can be utilized to best advantage.

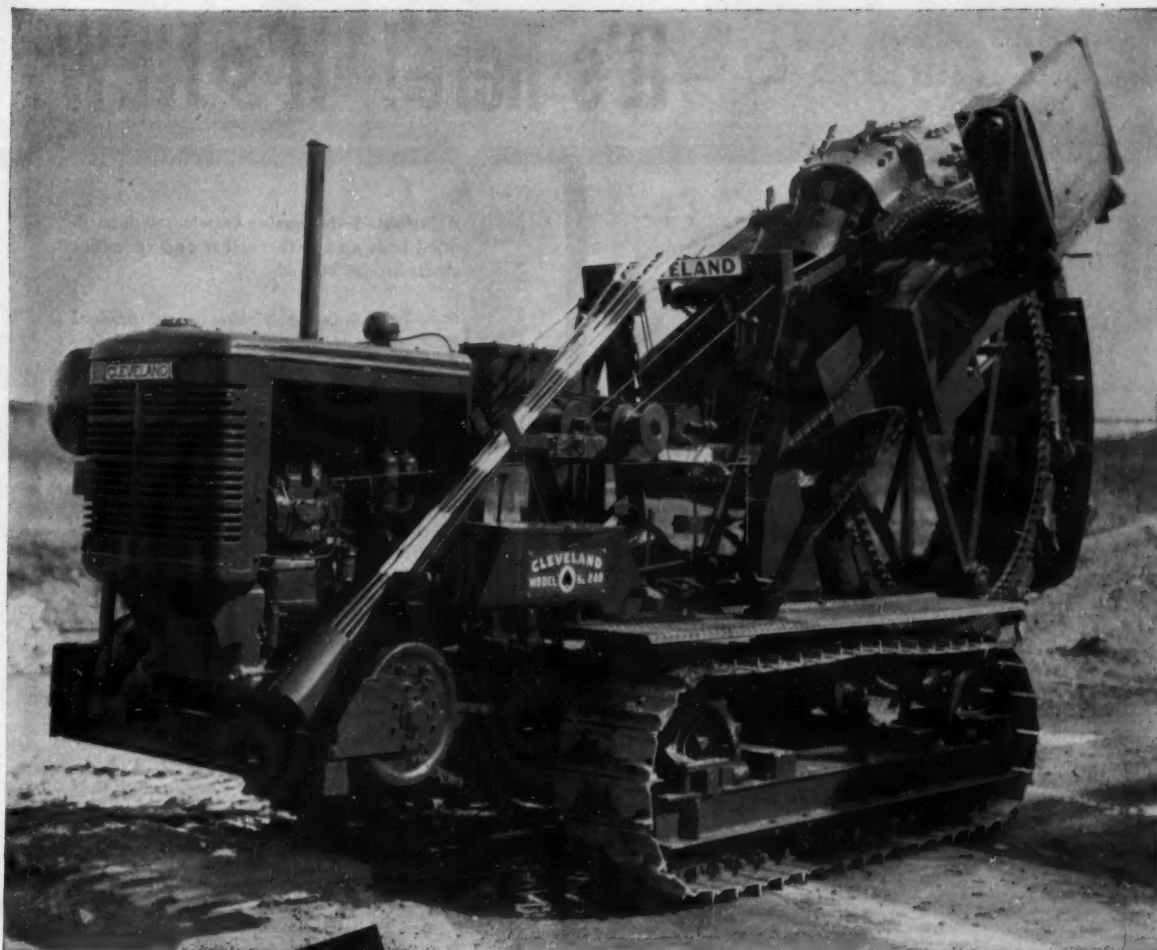
Engineers of the Steel Supply Division of U.S. Steel and the Lindberg Steel Treating Co. have developed a method of treating the steel washers used with the bolts to let them transmit clamping forces without gouging or scoring. Their greater ductility also lets the washers form with the structural steel members they fasten.

Shoe Holds Fabric Down

As the use of welded wire fabric reinforcement in asphaltic concrete increases (see CM&E Jan., p. 94), improved methods of installation are developed. One of the early annoyances was curling up of the wire, either hooking on the paver or become entangled in some moving parts. Some makeshift, although fairly effective, steel plates were used at first to hold fabric down under the paver.

Recently, the Colorado State Highway Department devised new attachments for a Barber-Greene paver while resurfacing and reinforcing an asphalt stretch near Colorado Springs. The hold-down

(Continued on page 20)



A Great New

CLEVELAND

The Model 240

DIGS 20" - 36" WIDE, DOWN TO 6'3" DEEP

● This powerful new trencher possesses all the famous time-proved CLEVELAND advantages—plus valuable new features that make it the finest trencher of its size and capacity ever built.

It is built to deliver—*is now delivering*—outstanding digging performance...

For Trench Work of Every Kind
PIPELINES • UTILITIES • DRAINAGE • IRRIGATION, ETC.

Ask Your Local Distributor for Bulletin S-119, or Write:

THE CLEVELAND TRENCHER CO. • 20100 ST. CLAIR AVENUE • CLEVELAND 17, OHIO



CLEVELAND

It's here! It's NEW



In ROCK or dirt this 1½-yard rock-type dipper, backed by a heavy-duty, one-piece chain crowd and sturdy shipper shaft, has powerful crowd plus easy operation and fast digging cycle.

NEW Adjustable Self-Cleaning Crawlers with hardened lugs and with rollers and sprocket shafts bronze bushed.

NEW Shoe-Type Steering Brakes permit gradual or sharp turns without stopping to shift jaw clutches.

NEW Big-Capacity Hoist Drums, mounted in tandem, will spool up to 470 feet of ¾" cable or 385 feet of 7/8" cable.

NEW Internal Two-Shoe Clutches on main drums are power booster controlled through mechanical linkage.

NEW Worm Beam Hoist on the Erectors Model is vertically mounted and is independent of all other operations.

NEW Hydraulic Fluid Coupling, with a two-plate disconnect clutch, cushions shock in the power take-off.

NEW All-Weather Steel Cab of heavy gauge steel and safety glass completely encloses and protects machinery and operator.



The long, wide crawlers, providing maximum stability and the natural built-in balance, makes the 70 or 700 an ideal dragline for stripping, loading or ditching.



As a hoe it will dig 27 feet below crawlers — dump at 14½ feet above. Here a 54-inch-wide dipper digs into hard blue clay with a hump boom.

-a low-weight, low-price 1½-yard crane-shovel

introducing new models

70 standard

700 erectors crane

Now, for the first time BAY CITY is offering this 1½-yard crane-shovel to fill the need for a large-capacity, low-weight, low-price machine on many jobs. Thus, it offers economical operation on many types of work too small for larger capacity, heavier machines or too big for smaller capacity, lighter machines.

With a weight around 40 tons, this new crane-shovel can be stripped down to less than 25 tons for trailer moves. As a crane, it is rated at 46,000 lb. at 12-ft. radius with a 45-ft. boom. But it is also built as an Erectors Crane for long-boom work and can handle 25,300 lb. at 25-ft. radius at the end of a 100-ft. boom. It is fully convertible.

Completely field tested this new crane-shovel has many outstanding features and modern developments. Some are listed here. They will warrant your study. These and other features contribute to smooth, efficient performance with fast-operating cycle and maximum economy.

For complete information write for illustrated catalog or see your nearest BAY CITY dealer.

The Erectors Crane Model 700 handles 100 feet of deep-section pin-connected boom. Hi-gantry, boom back-stops, floating bridle and pendants are standard equipment; along with independent worm boom hoist.

WRITE for CATALOG 70/700 A-2

This 16-page catalog is yours for the asking. It tells the story of the 70/700 in pictures and text. Write for your copy today — no obligation.



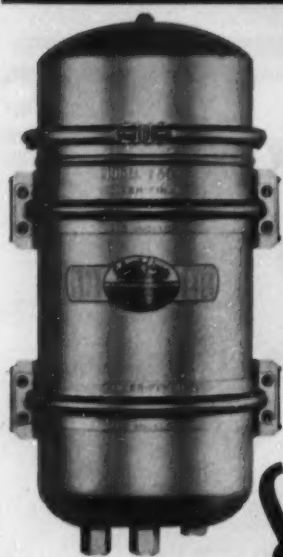
BAY CITY

BAY CITY SHOVELS, INC. • BAY CITY, MICHIGAN

SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS

239

Standard of the Industry Since 1936



**AND NOW!
EVEN BETTER
THAN EVER!**

Luber-finer

NEW REVOLUTIONARY MODELS 500-C and 750-C

Fully Covered by issued and pending U.S.A. and Foreign Patents

Save TIME and MONEY with
Luber-finer's FASTER
SIMPLIFIED Pack Replacement

Luber-finer Exclusive Features

- **SINGLE BOLT CLOSURE**—Ingeniously designed Clamping Ring utilizes Single Bolt Closure for quick, easy Pack Replacement.
- **POSITIVE SEALING GASKET**—Long lasting "O" ring type gasket assures leak-proof lid closure at all operating pressures.
- **NEW TYPE INTERNAL DESIGN AND CONSTRUCTION**—Provides multiple seal to eliminate the possibility of oil by-passing the Luber-finer pack.
- **DUAL SAFETY VALVES**—Prevents oil drain-back, assuring exact crank case oil level reading at all times, stops oil from circulating through unit if lines are reversed or if Luber-finer is otherwise improperly installed.
- **ONE-PIECE EXTRUDED STEEL HOUSING**—Plus rugged mounting brackets insures durability and long, trouble-free operation.
- **TIME-TESTED PATENTED FILTERING PROCESS**—Only in genuine LUBER-FINER PACKS—the exclusive patented filtering process proved by millions of satisfied users the world over.

FOR COMPLETE INFORMATION WRITE DEPT. 7

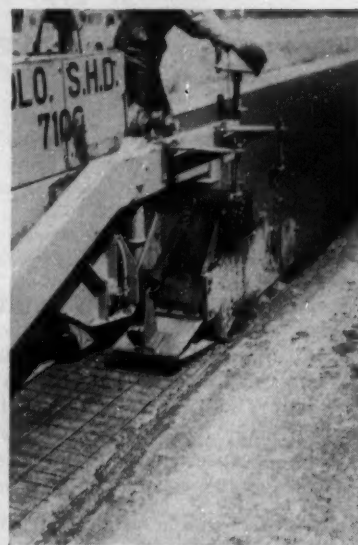
LUBER-FINER, INC., 2514 So. Grand Avenue, Los Angeles 7



**IT'S WHAT'S
INSIDE THAT
COUNTS**
The Efficiency of
LUBER-FINER'S
Patented Process Pack
**HAS NEVER
BEEN EQUALLED!**

JOB TALK . . .

Continued from page 16



shoe built is installed just ahead of the conveyor screw, on the outside of the crawler track on each side. It is a V-shaped steel plate with the trailing end of the bottom leg sliding over the wire fabric going into the paved surface. It is hinged and a heavy coil spring attached to exert constant down pressure on the wire.

Wire fabric between the crawlers is kept down by a long steel plate running back between the tracks with a cross-bar trailing just ahead of the conveyor screw. A compression spring keeps the plate on the road, ironing out the wire as the paver advances.

What About That Grease Fitting?

Most maintenance personnel have been educated on how important it is to lubricate equipment regularly, but are inclined to overlook the proper care and inspection of the grease fitting.

These fittings and assemblies should be removed from time to time and thoroughly cleaned. Solvent and compressed air may be used to aid in cleaning, and if damage to a fitting is discovered, it should be replaced immediately. The small cost of a new grease fitting is trivial compared to the damage that can result from lack of lubrication due to one faulty fitting.



MUSCLES OF STEEL took the load off his back

Sweat and a strong back just aren't enough when it comes to meeting the stepped-up demands of modern construction work. Today's contractors and builders call on *muscles of steel*—sturdy wire rope—to lift and carry their heavy loads.

Supplying these *muscles of steel* to the giant that is American industry is our big job here at Wickwire—a job that has commanded our vigilant care

and painstaking quality control for over half a century.

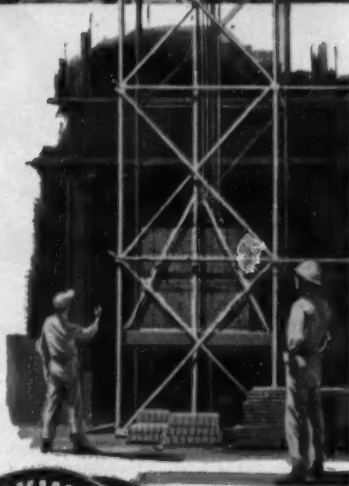
In the mines and the quarries. In the logging camps and the oil fields. On construction and highway projects. With the fishing fleets and in materials handling. Wherever wire rope is used, Wickwire Rope has earned an outstanding reputation for efficiency, utmost safety, long economical service and unfailing reliability.

every industry benefits from wire rope

WICKWIRE ROPE



PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION



2487

THE COLORADO FUEL AND IRON CORPORATION—Denver, Colo. • Pueblo • Leadville • Silverton • Durango • Montrose • Grand • Silt • Lake City • Aspen

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WICKWIRE SPENCER STEEL DIVISION—Chicago • Detroit • Gary • Hammond • Indianapolis • Kansas City • Minneapolis • St. Louis • St. Paul • Toledo • Youngstown

Builders of huge Idaho dam win race against time and flood with help of Du Pont "Zerex" anti-freeze

REG. U. S. PAT. OFF.



At this rugged spot on the Clark Fork River, sweeping spring floods made construction of the multimillion-dollar Cabinet Gorge Dam one of the toughest nuts ever cracked by big-league contractor Morrison-Knudsen. In a few short minutes, an uncontrolled flood triggered by thawing snow could have wiped out the work of months.



This was fall. The floods which swelled the river's flow of water to 10 times its normal size, were due in May. The two tunnels diverting water around the dam site couldn't possibly handle the excess. There was only one answer: the dam itself must be ready—months ahead of schedule—to meet the wall of water!



By December snow, the thermometer huddled near zero. Still the builders drove themselves around the clock, gave their machinery a back-breaking beating. Oiled the compressors, put anti-freeze (pre-mixed Du Pont "Zerex") in trucks and power shovels . . . no time then for overhauls. But when May came, the floods spilled harmlessly over the dam's top.



Much of the credit is given to Du Pont "Zerex." "In a crisis when we couldn't afford an hour of downtime, the fact that we could pre-mix 'Zerex' and keep a uniform solution on hand to replace losses was a lifesaver," says Director of Procurement, R.E. Herrick. "You don't have to tell us 'Zerex' gives winter protection without corroding. We know it!"

DUPONT
ZEREX
 REG. U. S. PAT. OFF.
Anti-Rust ANTI-FREEZE

E. I. DU PONT DE NEMOURS & CO. (INC.), WILMINGTON, DELAWARE

Hydro-Trencher puts the squeeze on tough soil!



Working in conditions like this won't slow down the Oliver 88WT Hydro-Trencher. It digs through rocky soil, roots or hard clay fast and clean. Hydraulic down pressure does all the work. The bucket is *forced* full in the toughest going. Two completely separate hydraulic circuits keep pressure on every maneuver, even when you perform two operations at once. You've got working

power all the way—to speed your work, to boost your production.

A one-man rig, the 88WT is ready to work or move in a moment. Its half-yard capacity and rubber-tired mobility cut hours and dollars from any job. Its compact design and delicate hydraulic control let you work next to pipes, walls, foundations, without fear of damage. The rugged, hydraulic stabilizer blade holds the

unit level and steady, and also doubles as a backfiller blade. And here's a bonus feature, turn the trenching bucket around, in minutes you have a swing loader with all the power features of the trencher.

For more profit, put the squeeze on your trenching or loading operations with the Oliver 88WT Hydro-Trencher. Visit your Oliver Industrial Distributor for a demonstration.



OPERATING FEATURES OLIVER 88WT HYDRO-TRENCHER AND SWING LOADER COMBINATION

- * One-half yard bucket
- * Digs to 10 feet (12 feet with optional boom cylinder)
- * Loads to 10½ feet (12 feet with optional loading bucket)
- * 200° boom swing

THE OLIVER CORPORATION
400 West Madison Street, Chicago 6, Illinois



a complete line of industrial wheel and crawler tractors

IT'S YOUR BUSINESS . . . Continued from page 12

high, it was the first interruption in the steady up-trend in construction firms since 1945.

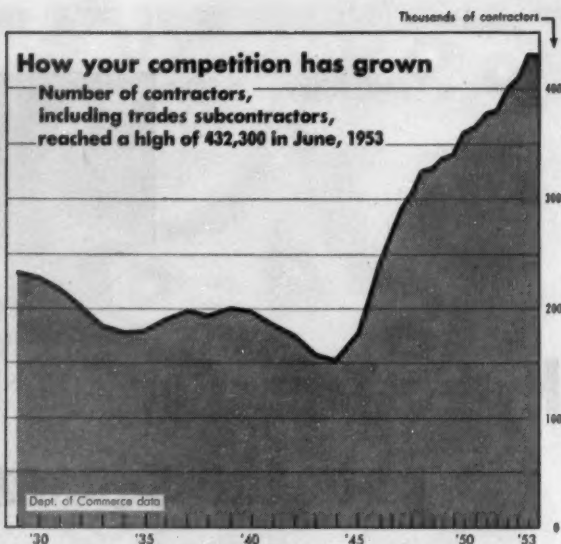
The reason for this slight decline was the 25,700 contractors and subcontractors who dropped out of business during the second half of '53. This was the largest number of pull-outs during the second half of any year since 1947. At the same time, the number of new entrants dropped to 23,900, the smallest number coming in during the July-December period of any year in the 1947-53 period (see chart, page 12).

Big Firms Increasing Fastest

The chart shows how big contractors have been increasing at a faster rate than smaller firms. This is true whether you measure size by number of employees or by total dollar volume of work handled. Furthermore, the biggest increases are in contractors handling the largest dollar volume. So that you can compare the rates of increase in number of firms by size of forces and by dollar volume, these trends are plotted on a semi-logarithmic scale.

The latest breakdown of contractors by number of employees is for January '51, when there were 136% more contractors and subs of all sizes than in January '45. Firms with 20 or more employees increased much more, 172%, than those with 3, or less, employees which increased by 128%.

Over this same period, the number of contractors handling \$100,000 or more of heavy construction per year climbed by 211%. Here again, the biggest increase was in the larger firms—those handling \$1,000,000 or more—which jumped by 464%. This compared with a 139% rise in the number of firms doing \$100,-



000-\$500,000 heavy construction per year.

Since then, million-dollar contractors have continued to increase faster than the smaller operators. In '53 there were 593% more of these big companies than in 1945, compared with a 153% rise in the number of firms doing \$100,000-\$500,000 annually.

Capacity Increase a Key to Competition

Between 1945 and June '53 the number of general
(Continued on page 32)

YOUR BOND RATE COULD GIVE YOU THE EDGE ON YOUR NEXT BID!

Ask your Indemnity Agent to establish your credit line now with Indemnity Insurance Company of North America. This independent company offers the lowest bond rates* to contractors of skill, integrity and responsibility.

To save money on your bond rates, and be assured of getting bonds on future jobs without delay, see your Indemnity Agent now.

*Sorry, Indemnity's low rates are not available in Louisiana and Texas.

Protect what you have



**INDEMNITY INSURANCE COMPANY OF
NORTH AMERICA**

Philadelphia 1, Pa.

One of the North America Companies, which are headed by Insurance Company of North America, founded 1792

**MOST SENSATIONAL CONVEYANCE
EVER BUILT TO SOLVE A
HAULAGE PROBLEM**



**IT TOOK NOAH
100 YEARS
TO BUILD THE
FABULOUS ARK...**

...and it still floats today. Noah's Ark is up there today in 100 perfect years. It was a huge ship in every respect with approximate dimensions of 400 ft. in length, 75 ft. wide and 45 ft. high. It presumably had three decks and many small room-like chambers inside. Noah was 600 years old when the waters covered the earth. After seven months and twenty days afloat, the Ark landed on Mt. Ararat.

DART 20S

**20 TON CAPACITY...
STANDARD MODELS IN STOCK**

Undoubtedly the most sensational truck in its class! With a wheelbase of 120 inches (compared to Studebaker Champion, 116½ inches), the New Dart 20S turns in 21 ft. radius, 225 or 275 M.P. diesel engine (optional) hydraulic steering, front and rear two-stage springs. Available with conventional transmission or torque converter, the new DART 20S is built to deliver high performance with a minimum of maintenance... even on the toughest job!



-DART TRUCKS



CALL A DART MAN FOR COMPLETE INFORMATION

BIRMINGHAM, ALA.—J. C. Furrig Tractor Co.

BURLEY, ARIZ.—East Service & Supply

CHARLOTTE, N. C.—W. Va. Tractor & Equipment Co.

CHICAGO, ILL.—Carroll & Edwards Equip. Co.

CLEVELAND, OH.—Connell Construction Equipment Co.

DALLAS, TEX.—Carroll-Kent Co.

DENVER, COLO.—Western Machinery Co.

DULUTH, MINN.—Meyer Motors

HARTFORD, CONN.—R. W. Thompson Co.

KANSAS CITY, MO.—Forkhouse Equipment

KINGVILLE, TEX.—Osborne Equipment Co.

LOS ANGELES, CALIF.—South South Union Co.

MAINEVILLE, VERM.—McCarthy, Juno & Woodard

OAKLAND, CALIF.—C. H. Grant Co.

OAK LAKE, ILL.—Tractor & Equipment Co.

PHILADELPHIA, PA.—Service Supply Corp.

PORTLAND, ORE.—Palzer Machinery Co.

PRESQUITT, ARIZ.—Prescott Tractor Sales

ROCKAWAY, N. J.—Linden Rockwell Co.

SALT LAKE CITY, UTAH—Arnold Machinery Co.

SEATTLE, WASH.—Sawada Equipment Co.



SIGN...of good times ahead!

Good times for the motoring public...the big highway-building program getting under way.

And, there are good times ahead for the vast construction industry...a bellwether of all industry. That's why we at Chain Belt are frankly happy about the whole thing. For, in those miles upon miles of highways, bridges, culverts, there's an important place for Chain Belt's Rex® Pavers, Truck Mixers, Pumpcretes®, Building Mixers and Pumps...a place, too, for our chain drives on the earth-moving equipment that clears the way...our

belt conveyors and bucket elevators that move the aggregate, sand and cement for the highway program.

For the construction industry, like many other basic industries, looks to Chain Belt and Rex Construction Machinery for equipment that helps reduce costs, improve efficiency.

There is a Chain Belt District Sales office or Rex Distributor in all principal cities. Call your local Rex Man or write Chain Belt Company, 4664 W. Greenfield Ave., Milwaukee 1, Wisconsin.

CHAIN BELT COMPANY



CONSTRUCTION MACHINERY

MOTO-MIXERS®

MIXERS

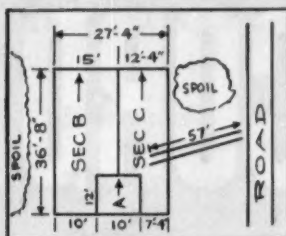
PUMPS

PUMPCRETES®

PAVERS

4 Basements Dug In 9 Hours and 25 Minutes

Young and Dietrich, new, aggressive excavating contractors in Painesville, Ohio, were awarded a contract recently to dig 10 basements and sewer trenches in a new small-home development. A time study was made of the first 4 basements—they were all dug in 9 hours and 25 minutes with a Lorain TL25-J Hoe using a 36" wide, $\frac{3}{4}$ -yd. bucket. The excavations varied slightly in size, but here are figures on one basement.



Dimensions 36'8" x 27'4" x 5' deep
Sewer

Sewer Line 57' long x 3' wide x 8' deep.
Start Sewer Line 11:56 A.M.
Delays 55 mins.
Finish Sewer Line 1:50 P.M.

Total 114 mins.

Basement
Start Section A 1:55 P.M.
Finish Section A 2:15 P.M.

Total 20 mins.
Start Section B 2:35 P.M.
Delays
(backfill sewer trench) .. 10 mins.
Finish Section B 3:55 P.M.

Total 80 mins.
Start Section C 3:57 P.M.
Finish Section C 5:05 P.M.

Total 68 mins.
Total for Basement No. 4—282 mins.

4 { Sewer actual digging time .. 55 mins.
HRS., { Basement actual
42 { digging time 2 hrs. 35 mins.
MINS. { Time to backfill sewer 10 mins.
{ Delays — Lunch 30 mins.
{ Searching for outlet 25 mins.

Basement No. 1 was dug in 2 hours and 11 minutes plus 35 minutes delay for checking grade and installing water line.

Basement No. 2 took 2 hours and 15 minutes plus 37 minutes delay for checking grade and cleaning up cave-ins on basement No. 1.

Basement No. 3 consumed 2 hours and 21 minutes plus 37 minutes delay for discussion between operator and contractor.



As basement No. 2 is finished at 3:18 P.M., the concrete footers are already being poured for basement No. 1 which was finished just 3 hours and 43 minutes earlier.

The above figures were secured on actual on-the-job operations. Nothing was planned. Nothing was staged. Production figures like these make basement digging profitable. Lorain TL25 Hoes match them all over the world.



HERE'S HOW TO

"KEEP OUT OF THE HOLE"

WHEN YOU DIG BASEMENTS

You won't get in the hole on costs if you use a TL-25 Hoe for basement digging, because you can work from the top to cut straight sidewalls, trim square corners and grade level floors to reduce hand finishing. You can spoil pile in any direction, dig utility trenches, and forget the problems of building ramps and the high maintenance of constant travel that is necessary with some types of equipment. TL-25's consistently dig an average residence basement in 3 hours or less. And when you get other types of jobs, it is easy to change to a dragline, clamshell, shovel or crane front end to handle them profitably. Many contractors started their careers with this versatile machine that is so adaptable to their growing needs.

There are many reasons why a TL-25 will throw more dirt per day—at less cost. Call your Thew-Lorain Distributor today for the full story.



WILL KEEP YOU "ON TOP" OF PROFITS

Here's why! High-speed, balanced operating cycle, easy-to-service, hydraulic tread-travel lock, anti-friction bearings, 4 crawler sizes to choose from. Inexpensive to own. These are but a few!

THE THEW SHOVEL CO., LORAIN, OHIO

WRITE FOR HOE BOOKLET
— showing many uses of
Lorain Hoes of all sizes
— on basements, sewer
lines, utility lines—jobs
that will make you money.
Ask for Hoe Booklet.

THEW LORAIN.

OFFERING MORE THAN 135 SHOVEL CRANE
COMBINATIONS ON CRAWLERS OR RUBBER TIRES
TO BEST FIT YOUR JOB FOR PROFIT!

ANOTHER NEW TUNNEL RECORD by GARDNER-DENVER



New record for big-bore, timber-supported tunnel: 314 feet in six days.

CONTRACTOR: Walsh Construction Company

PROJECT: Pacific Gas and Electric Company Tunnel at Big Bend, California

TUNNEL LENGTH: 21,500 feet

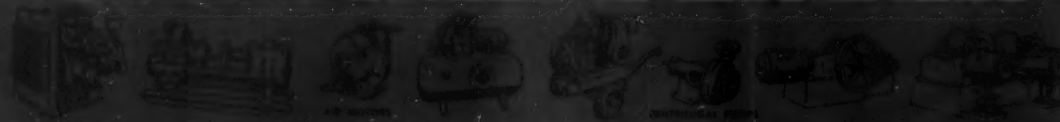
SIZE & SECTION: 23-foot horseshoe

ROCK: Lava

ALTITUDE: 2,500 feet.

SINCE 1959

GARDNER-DENVER



THE QUALITY LEADER IN COMPRESSORS, PUMPS AND ROCKETRY FOR CONSTRUCTION, MINING, PETROLEUM AND GENERAL INDUSTRY

Gardner-Denver Company, Quincy, Illinois

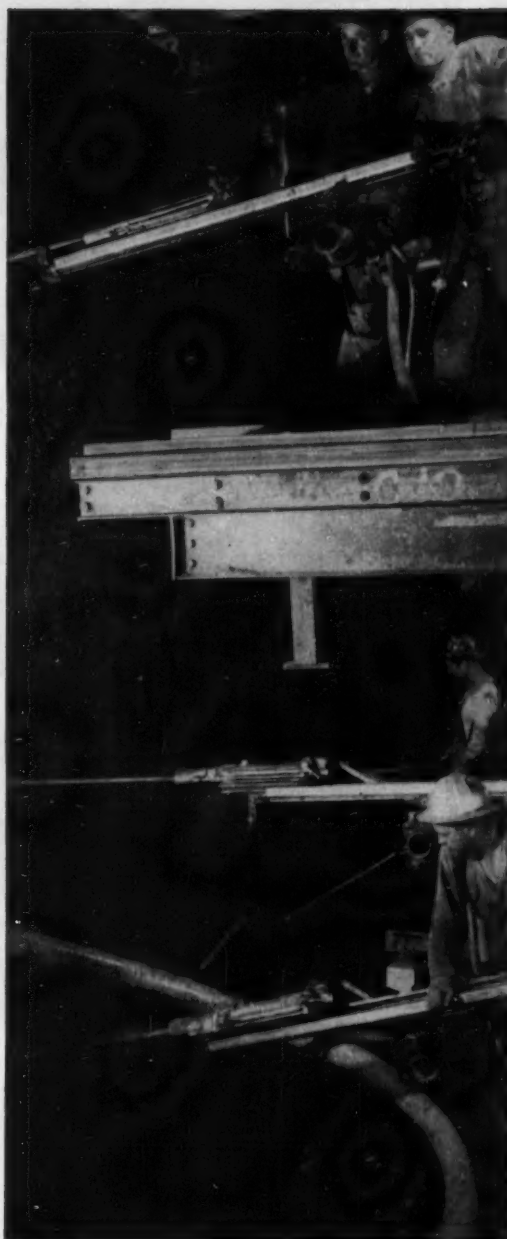
In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ontario

GARDNER-DENVER

No. 1 CHOICE

AT P.G.&E. PIT No. 4

- 5 WBJIM**
Stationary Compressors
- 2 WBK-500D**
Portable Compressors
- 1 WBH-365D**
Portable Compressor
- 25 SF93P**
Drifters on 48" Change
Aluminum Guide Shells
- 18 JA & JB**
Hydraulic Booms
 - 1** Hydraulic Boom with Power
Swing and Power Dump and
Swing for Drill
- 2 JCM**
Hydraulic Pump Units
- 5 VP4**
Sump Pumps
- 10 S55D**
Sinkers
- 3 S73D**
Sinkers
- 2 R91SC**
Stoppers
- 1 S48P**
Air Feed Leg Drill
- 2 28E**
Clay Spaders
- 1 EF-BC**
10 x 5 x 10 Grout Pump
- 1 EF-FSA**
10 x 4 1/4 x 10 Grout Pump
- 1 FD-FS**
10 x 3 x 10 Grout Pump



PERFORMANCE pays off in EXTRA PAYLOADS!



Picking up a heaped load of about 18 cu. yds. on a section of the Los Angeles Golden State Freeway. Contractor: Kuhn & Murphy.

EUCLID SCRAPERS have proved their high job availability and productive capacity on all kinds and sizes of jobs. They are the fastest growing scraper line in the industry and an important part of the profit picture for many leading contractors ... large and small.

Before you buy any scraper equipment, check with "Euc" owners about actual job performance

... yardage moved per day, and maintenance and operating cost — week by week — not just "paper" figures. You'll find "Euc" Scrapers are real money makers for owners because they get heaped, compacted loads easily, maintain fast travel speeds, dump and spread the load on the run — all adding up to more payloads per hour day after day. Have your Euclid Distributor give you all the facts soon.

EUCLID DIVISION GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

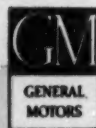
Cable address: YUKLID

Code: BENTLEY



Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE



Top Performance on the Toughest Jobs... *Everywhere!*



Dawson-Wade & Co. Ltd. have a tough 22-mile section of the Trans-Canada Highway near Golden, British Columbia. A "Euc" scraper is shown getting a heaped load of approximately 18 cu. yds. from a deep cut on this rough and rugged highway construction job.



One of two "Euc" Scrapers stripping overburden in a Fuller's Earth mine of Floridin Company, Quincy, Florida. This material is hauled 100 to 500 feet to a waste dump, from which it can be returned by the Scrapers to reclaim the land after the Fuller's Earth has been mined.



Four "Eucs" made the dirt fly as they averaged 2.6 minutes per round trip on this Ohio Turnpike job for W. T. Cook Const. Co. Although loading in hard, heavy clay, each "Euc" was heaped and away on the 1000 foot haul in less than a minute.

"Euc" scrapers picked up big loads in a hurry on this 12.9 mile section of the Garden State Parkway near Pleasantville, New Jersey for S. J. Groves & Sons, Minneapolis. "Euc" Loader and Bottom-Dumps were also used on this project.



Amis-San Ore Co. used five "Euc" scrapers, a Loader and fleet of Bottom-Dumps on a 2¼ million yard runway construction and channel relocation job at Lincoln Air Force Base in Nebraska. Here a "Euc" 15.5 yard scraper, working on the channel relocation, is loaded with clay excavation for the 1¼ mile haul.

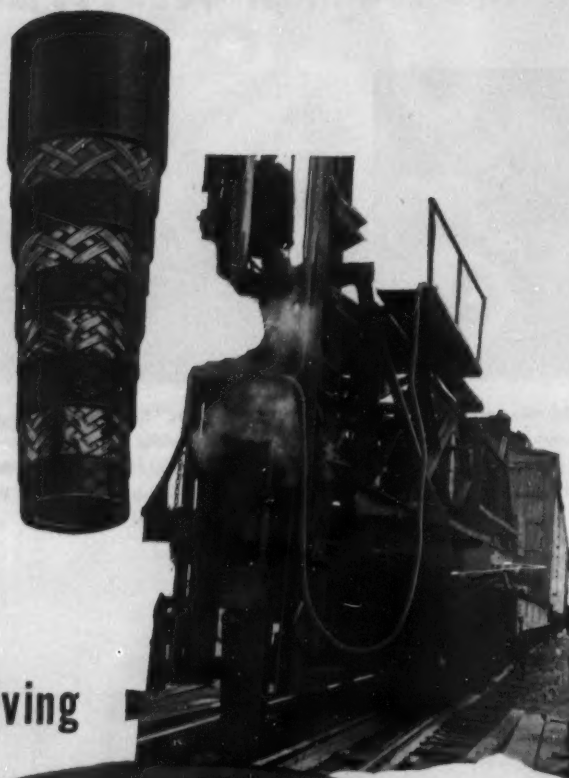


Levelling a new park at Wellington, Dryden Construction Co. used the first "Euc" Twin-Power Scraper in New Zealand. Round trip haul was only 300 yds. but up-grades on the return trip were as much as 40%. The "Twin" spread loads of 24 cu. yds. in a gully and made the cycle in less than 2 minutes.



Contractor preference — based on high production and low cost per yard moved — has made "Euc" Scrapers the fastest growing line in the field

**Takes
the
Drive
in
Piledriving**



Quaker

**IRONSIDES
PILEDRIIVER HOSE**



Here is a lightweight, flexible hose that offers definite assurance of longer service plus extra safety. Specifically made for rugged piledriver use. Built-in, triple braid steel wire armor stands up to high pressures. Glass braid for insulation and extra strength. Tube resists damage by oil. Won't collapse, or separate from rugged abrasion resistant cover. For the hose that takes temperatures up to 388° F., plus all the twisting, dragging and crushing you can give it—specify Ironsides—another Quaker quality product for extra stamina, service and savings.

Write for name of nearest distributor



Belting, Hose, Packing and
Moulded Rubber of every
construction for every need.

QUAKER RUBBER CORPORATION
DIVISION OF H. K. PORTER COMPANY, INC.
OF PITTSBURGH

PHILADELPHIA 24, PA.
Branches in Principal Cities

IT'S YOUR BUSINESS . . .

Continued from page 24

and subcontractors increased 78% while the physical volume of new construction put in place rose by 83%. This would seem to indicate that new firms were able to get enough work and that competition would not get too stiff.

However, the joker is that capacity has been growing much faster than the volume of work ready to go ahead. This is because in addition to the big increase in number of firms competing in the field, individual contractors have expanded greatly their capacity. Last year we reported to you (CM&E September 1953, p. 18) that on the average heavy construction contractors had 50% more capacity than in 1949, in terms of dollar volume.

While the outlook is for another big construction year in '54, the growth in contractor capacity also is expected to continue so that competition should remain keen.

**SOME BIG CONTRACT
AWARDS OF THE MONTH**

David Kay, 10051 Southfield St., Detroit 28, Mich. 800 brick ranch houses, Brookdale, Masonic & Harper Sts., St. Clair Shores, Mich., for Meadowbrook Realty Co., 10051 Southfield St., Detroit. \$8,000,000.

Williams Bros. Co., National Bank Bldg., Tulsa, Okla. 260 mi. 16-in. crude oil pipe line from Clearbrook to Minneapolis-St. Paul, Minn. for Minnesota Pipe Line Co., (Southern Production and Woodley Petroleum Co.), c/o contractors. \$12,500,000.

Del E. Webb Construction Co., & Aldon Construction Co., 5101 San Fernando Road, West Los Angeles, Calif. 6000 residences, schools, shopping centers, playgrounds, community facilities, at Denver, Colo. \$100,000,000.

Harris Structural Steel Co., 419 Fourth Ave., New York, N.Y. Superstructure of Sakonnet River Bridge, Sakonnet River, Portsmouth-Tiverton, for the state of Rhode Island, State Purchasing Agent, State House, Providence, R.I. \$3,816,777.

(More Big Jobs on page 202)

THERE'S A **Whiteman** MODEL FOR

EVERY SIZE JOB!

OF CONCRETE FLOATING
AND FINISHING...

MODEL C-4 Large, heavy duty. 46" dia. 4 universal trowels for floating or finishing.

MODEL B-1 Suitable for large areas. 44" dia. Snap-on float trowels. Largest seller.

MODEL J-1 Medium machine for general use. 34" dia. Float trowels snap on in seconds.

MODEL M Small, compact for light construction. 29" dia. Perfect companion for larger machines.

BIG JOBS, SMALL JOBS, frequent or occasional jobs... no matter how much or how little concrete finishing you do, there's a Whiteman Floating-Finishing Machine to do it faster, better, cheaper. All offer *exclusive* Whiteman features... such as trowel adjustment with the machine in motion. And all offer *dependable* Whiteman quality... proved in performance during 17 years of pioneering and development. Ask your Whiteman distributor which machine will best serve your needs.

Whiteman

THE LEADER IN CONCRETE EQUIPMENT

Whiteman Manufacturing Co.
3249 Casitas Ave., Dept. C
Los Angeles 39, Calif.

Please send information on:

☐ Floating-Finishing Machines ☐ Vibrators
☐ Power Buggies ☐ Screeding Machines

Name

Firm

Address

City Zone State

How GM DIESEL POWER helps tap one of

WORLD'S RICHEST



First shipping at Knob Lake — GM Diesel-powered Allis Chalmers HD-20, world's largest crawler tractor, is dwarfed by 34-ton Euclid truck, powered by two GM Diesel engines with Torqmatic transmissions. A fleet of these units "walked up" under their own power—a 6-week trek over frozen tundra. Master Mechanic says, "They take a real licking up here—and GM Diesels stand up under it."

IRON ORE DEPOSITS



Punching a railroad 360 miles through mountains and muskeg to the rich new ore fields of Ungava, on the remote Quebec-Labrador border is the job of the Iron Ore Company of Canada, and contractors*. To build the road, tunnels, dams and terminal facilities they are using more than 200 General Motors Diesels for more different kinds of work than any other engine. The smooth power-packed GM 2-cycle engine is the world's most widely used Diesel because *it sticks dependably to any job and gets work done faster at lower cost.* Let this great GM Diesel engine prove its superior performance and economy on your job—just as it's doing on the world's biggest, toughest projects.

*CMMMK—Cartier—McNamara—Mannix—Morrison-Knudsen

DETROIT DIESEL ENGINE DIVISION • GENERAL MOTORS

Detroit 28, Mich. In Canada: GENERAL MOTORS DIESEL, LTD., London, Ontario

It Pays to STANDARDIZE on



... available in more than 750 models of equipment built by over 150 manufacturers



Laying rail near Mile 200 with Burro crane—one of the many General Motors Diesel-powered cranes and shovels used by I.O.C. GM Series 51, 71 and 110 engines feature same rugged 2-cycle design as GM locomotive engines—*more power in less space!*



Crushing rock for Menihiek Dam, 30,000 KW project at Mile 330, GM 6-71 Diesel drives Holland hammer mill producing up to 500 tons per day. Auxiliaries powered by GM Diesel-driven generator. Used earlier for lighting base camp, this unit had accumulated 18,000 hours without repairs.



No-turn shuttling, rapid acceleration and quick unloading of GM Diesel-powered Koehring Dumpsters add up to fast haul cycles in tight quarters. At Mile 11, a 2500-ft. tunnel was dug. In gorge between Miles 12 and 15, more than 400,000 cubic yards of rock were hauled by these flexible units.



Cutting lumber for townsite at Knob Lake, one of I.O.C.'s GM Diesel-powered sawmills turns out 12,000 board feet per day. "Never stalls on spruce knots." GM Diesel-powered tractors build and maintain logging roads. *Interchangeability of GM Diesel parts insures higher availability, cuts costs.*

SEE FOR YOURSELF... NOW

why

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MITI-MITE

leads the pack!

... in capacity,
speed, earning power

Full convertible.
Buckets from 20 to 32 in.
7 tons capacity as a crane.



Don't limit your production to the pace of old-fashioned machines... when you can buy the fast and modern P&H MITI-MITE at such a low price! Hundreds already in service all over the country and plenty more on the way!

Once you see it you'll agree, MITI-MITE is the most rugged little truck crane ever built. Take MITI-MITE anywhere — use it for all jobs... many that normally call for bigger machines. *Pocket the savings!* Watch how MITI-MITE handles standard heavy-duty attachments at maximum boom lengths. See the heavy-duty hoe and compare it with any other on the market. MITI-MITE works day after day with only gas and oil maintenance.

MITI-MITE leads the pack... the biggest and best producer in its class... at a new low price you won't pass up.



Check With Your P&H Dealer Today!

"Your P&H Dealer has the experience, the organization and the facilities to serve you reliably in every way. He's ready to deliver the kind of on-the-ground service that keeps your jobs moving on schedule. Your P&H Dealer is tops in the business. Get to know him."



Jaeger 125's on pipeline job

do 30% more work with the same tools*

To speed the laying of pipeline in this busy boulevard, a pair of Jaeger 125's were used in place of obsolete 105 ft. compressors to do the job 30% faster.

This capacity to get more work out of today's heavy air tools has made the "125" the most popular of all compressor sizes. Jaeger established this 125 rating 6 years ago and guarantees to deliver this volume at the lowest cost per cu. ft. of air of any port-

able air compressor on the market.

Now, when cost-savings are so important, talk to your Jaeger distributor. He has no obsolete size machines to sell you. He can save you money on air and air tool operation.

* Each 125 had the air volume needed to hold 2 heavy duty breakers at full pressure operation, hitting up to 1600 times a minute with a heavier impact of 55 to 60 foot pounds in every blow. With that 10 lbs. heavier impact, and 200 to 300 additional blows per minute, the same air tools easily averaged a third more work.

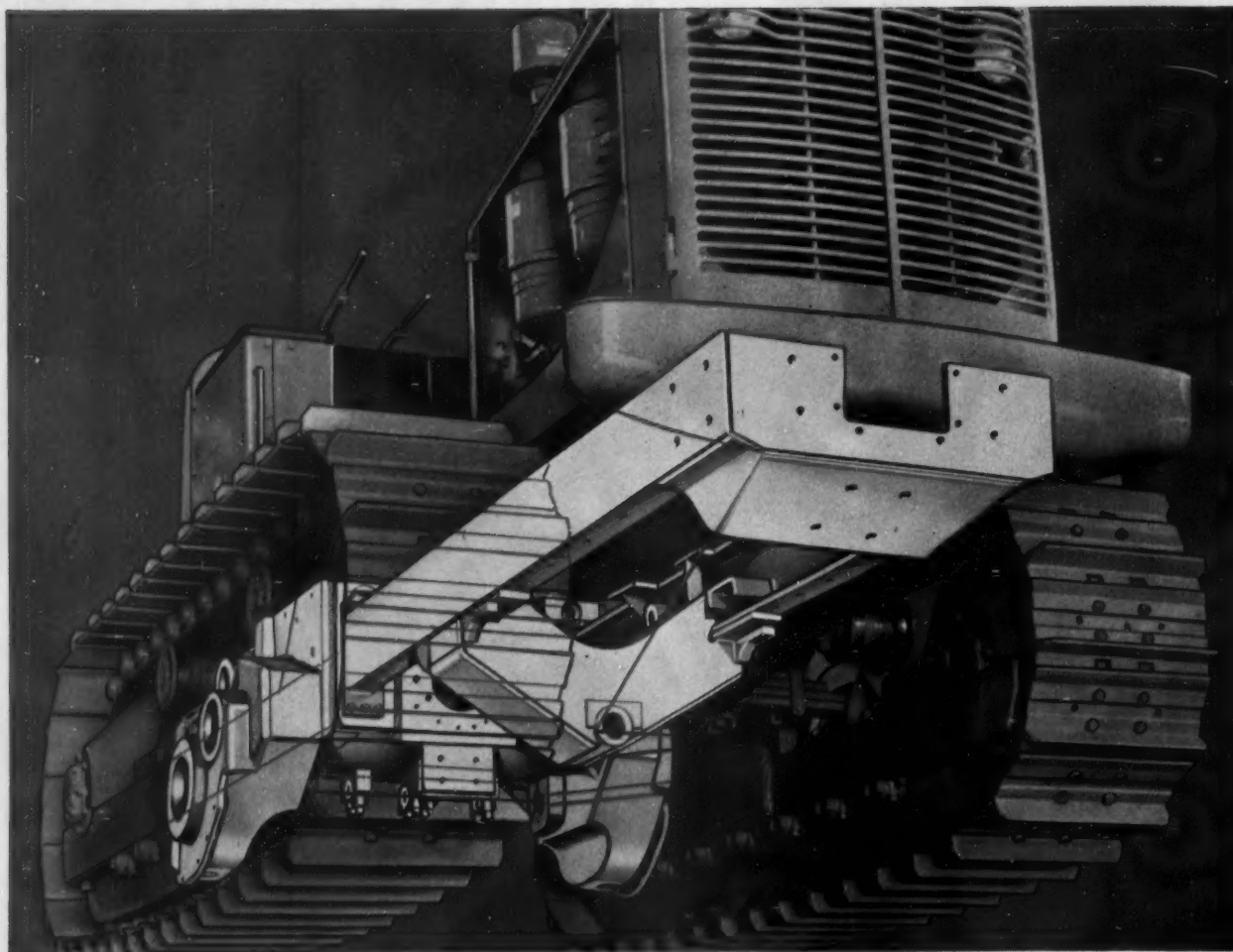
Jaeger Standards:	75	125	185	250	365	600
Old Standards:	60	105	160	210	315	500

For full information, ask for Catalog JC-1

THE JAEGER MACHINE COMPANY

800 Dublin Avenue, Columbus 16, Ohio

PUMPS • CONCRETE MIXERS • TRUCK MIXERS • LOADERS • PAVING MACHINES



HOW THE MAIN FRAME CONTRIBUTES TO TOP TRACTOR PERFORMANCE

All-Steel Box A-Frame is a Key to Outstanding, Low-Cost Record of Allis-Chalmers Tractors

Contractors all over the country are putting new emphasis on shrewd equipment buying. And rightly so. To win bids, stay on schedule and make a profit in the face of today's keen competition, they have to be sure of getting top value in design, performance and service features.

More and more of these contractors are now using Allis-Chalmers tractors. One of the big reasons is hidden in the heart of the tractor. It's the exclusive design which characterizes the main frames of all four Allis-Chalmers

tractors. These frames are one-piece, all-steel, welded structural members (like the girders in a bridge or the columns in a building). They help provide greater strength and flexibility to withstand shock loads, better equipment mounting, improved weight distribution and outstanding service simplicity.

We invite you to see these advantages . . . first at your nearby Allis-Chalmers dealer, and then in a demonstration. Whichever size you may be interested in, you'll see a tractor that is not just modified . . . but designed new-from-the-ground-up to meet the needs of today's jobs.

ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.



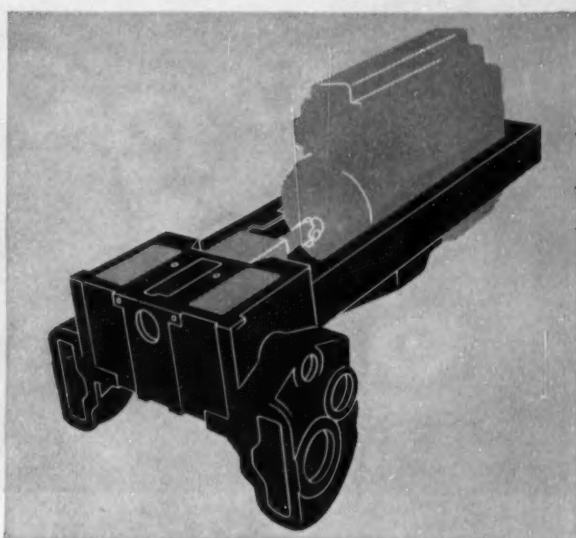
"Rolls with the Punch" — The resiliency of the high-tensile steel main frame enables it to flex slightly under extreme shock loads . . . without transmitting the strain to engine, clutch or transmission . . . thus offering extra protection to the complete machine.



Weight Distribution Designed for Today's Jobs — Box A-Frame lets Allis-Chalmers use a modern engine . . . locate main parts for best over-all balance . . . put more weight lower in tractor where it does the most good . . . make the tractor "built to take it."



Better Equipment Mounting — Designed to best serve changing tractor application (today over 70 percent of all tractor equipment is mounted), this compact main frame allows bulldozers to be mounted in close . . . provides ample clearance for equipment like front-end shovels . . . permits wide track shoes . . . improves performance of the entire unit.



Unit Construction for Service Simplicity — Since the main frame carries the structural load, power drive components are designed to do only their specific jobs. They can be readily removed, repaired or replaced without disturbing adjacent parts . . . saving service time . . . actually cutting down time because assemblies can easily be serviced under shop conditions if desired.

HD-20

Weight 41,000 lb
Hydraulic Torque
Converter Drive
175 net engine hp

HD-15

Weight 28,000 lb
Choice of standard
transmission
or hydraulic
torque converter drive

HD-9

Weight 18,800 lb
72 drawbar hp

HD-5

Weight 11,250 lb
40 drawbar hp

**PICTURE
OF THE
MONTH**

CONSTRUCTION
METHODS AND EQUIPMENT



It's Loaded

LOADED FOR ACTION, THAT IS. This Caterpillar D8 is carrying just about everything a driller's heart might desire. Riding piggy-back on the rear is a Joy 600-ft compressor operated by power take-off. Up front are two hydraulically controlled Joy drill jibs, and perched up top is a Kadcodust collector driven by a Hercules engine.

No trouble spotting this rig quickly and accurately over any terrain, and there is plenty of power to keep those drills busy. John Arborio, Inc., assembled the outfit for an \$11,500,000 joint venture that the Poughkeepsie contractor has with New York City's Corbetta Construction Co. to build 13 mi of New York Thruway near Kingston.

Announcing **BOSCH** High Cycle Electric Tools

Paving Breaker

FOR:
Demolition
Breaking Out
Chiseling
Clay Spading
Tamping
Asphalt Cutting
WEIGHT—64 lb.



Rock Drill

A lightweight tool that matches the performance of pneumatic Drills. Equipped with Pressure Blower.

WEIGHT:
Drill—65 lb.
Blower—20 lb.



Hammer

A Lightweight
Builders Hammer

FOR:
Chiseling
Chipping
Drilling
Cutting
Same Tool
Drills & Strikes
WEIGHT—14 lb.

HOMELITE Dual Purpose Generator

The power supply for Bosch tools — 2,500 watts — operates both High Cycle tools and Standard 110 volt electric tools and floodlights.

WEIGHT 138 lbs.



These ruggedly built tools are real cost cutters on any job. They combine low initial cost with low operating cost for unexcelled economy.

Lightweight—simple in design, yet they give performance equal to bulky, expensive, compressed air equipment.

HIGH CYCLE electric motors, powered by Homelite's dual purpose generator, will give you greater flexibility and thousands of hours of heavy-duty service. Ask for an on-the-job demonstration or for more information. Write Homelite Corporation, Port Chester, New York.

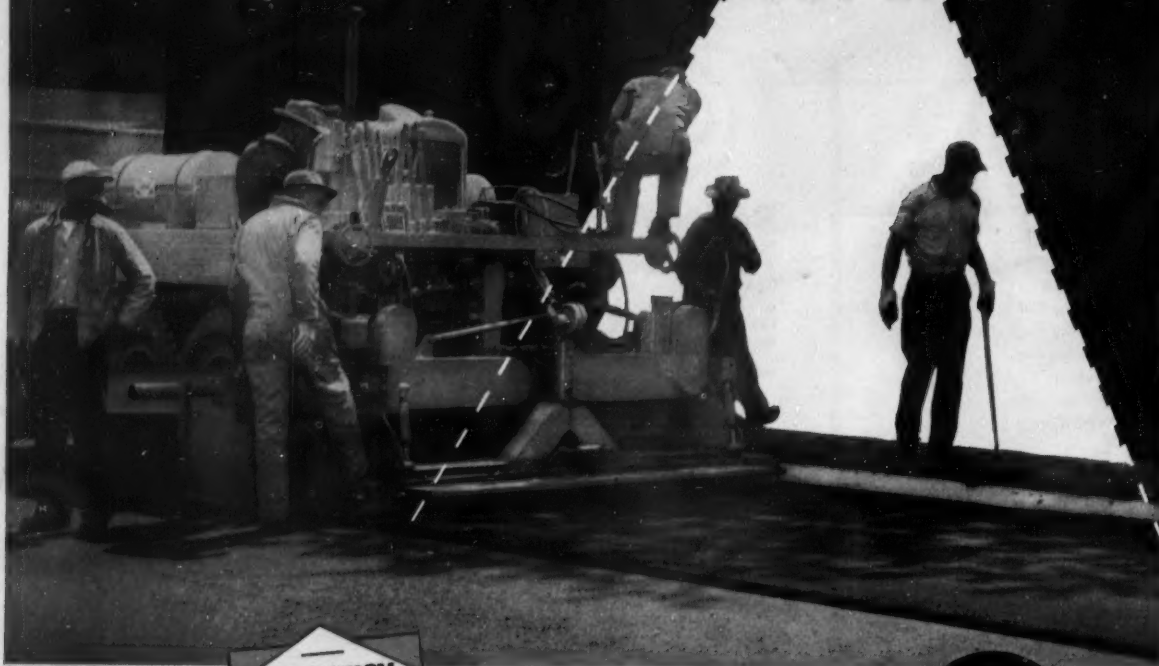
Manufacturers of Homelite
Carryable Pumps • Generators
Blowers • Chain Saws

PERFORMANCE • DEPENDABILITY
HOMELITE
CORPORATION
SERVICE

1008 RIVERDALE AVENUE • PORT CHESTER, N. Y.

Canadian Distributors: Terry Machinery Co., Ltd., Toronto, Montreal, Vancouver, Quebec.

Look at that Sheet!



...it's a

BLAW-KNOX

Bituminous Paver

on wheels

● Look at that sheet! Look at the edge! A smooth course, free from ripples. A firm, even edge easy to lay up to for a tight, firm joint. That is the result of the long Blaw-Knox wheel base and the accurate control made possible by Blaw-Knox hydraulic steering.

The Blaw-Knox brings you the simplicity of wheel mounting. It frees you from the complications, the upkeep and the oversteering characteristic of crawlers. Wheel design makes for good results with faster travel and cuts time loss in moving either on the job or in getting to new jobs. Wheels mean a better job, *faster*.

The check list at the side lists only a small part of the advantages of this advanced bituminous paver. Ask for the Greentree story and more details.

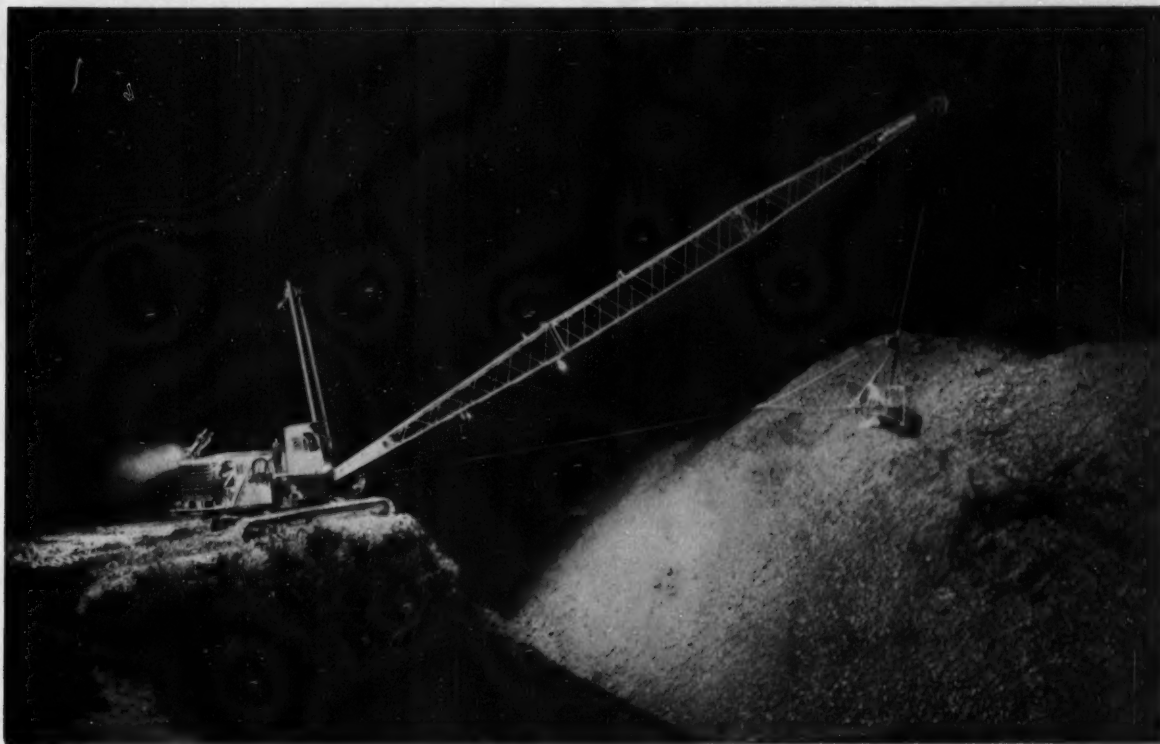
BLAW-KNOX COMPANY

Foote Construction Equipment Division
1910 STATE STREET NUNDA, NEW YORK

- ✓ Long wheel base and wheel steering assure greater accuracy and smoother course.
- ✓ Eliminates the 500 to 600 parts characteristic of crawlers.
- ✓ Tires absorb vibration, reduce chatter in screw and reduce wear and tear on machine.
- ✓ Leveling principle equalizes ordinary subgrade irregularities.
- ✓ Dual controls—operate machine from either side.
- ✓ Compacts to uniform density and automatically measures and levels.
- ✓ Handles boxcar trucks on grades with ease.
- ✓ Works close to curb.
- ✓ Conversion for increased width is easy and fast.
- ✓ Simple, easy crown adjustment.

On wheels
it will pave
for less

Electric Light and Power for Every Need
ONAN ELECTRIC PLANTS



How to get a day's work done on the night shift

This dragline moves mountains . . . *around the clock*, puts in close to 24 working hours every day! When the night shift takes over, so does the Onan Electric Plant which is mounted right on the dragline itself, supplying power for floodlighting the entire work area.

High-intensity lights at several points on the boom and transport unit throw light in every direction helping maintain day-time job progress while eliminating night-time hazards.

Plenty of light is the key to profitable night operations. Where space for mounting an electric plant is limited or weight is a factor, you get more light from an Onan Electric Plant. Take the Onan Model 10CW for instance. It delivers 10,000 watts, yet requires less than one cubic yard of space and weighs much less than many other electric plants of similar capacity.

On construction contracts where time is money, Onan Portable Electric Plants can give you the extra working time you need to beat the schedule.

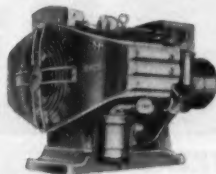
Write for folder showing the complete line of Onan Electric Plants.



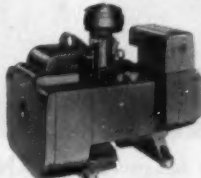
The Onan 5,000-watt Model 5CW is mounted at the boom end of the dragline in limited but adequate space. Two-cylinder, air-cooled engine is extremely quiet running.



Model 305CK, 3½ KW. Two-cyl. air-cooled, gasoline engine.



Model 5DRP, 5KW. Two-cyl. air-cooled Diesel engine.



Model 10CW, 10KW. Two-cyl. air-cooled gasoline engine.

Air or water-cooled Gasoline or Diesel powered

GASOLINE-POWERED

AIR-COOLED: 400 to 10,000 watts

WATER-COOLED: 10,000 to 50,000 watts

DIESEL-POWERED

AIR-COOLED: 3,000 and 5,000 watts

WATER-COOLED: 15,000 to 55,000 watts



D. W. ONAN & SONS INC.

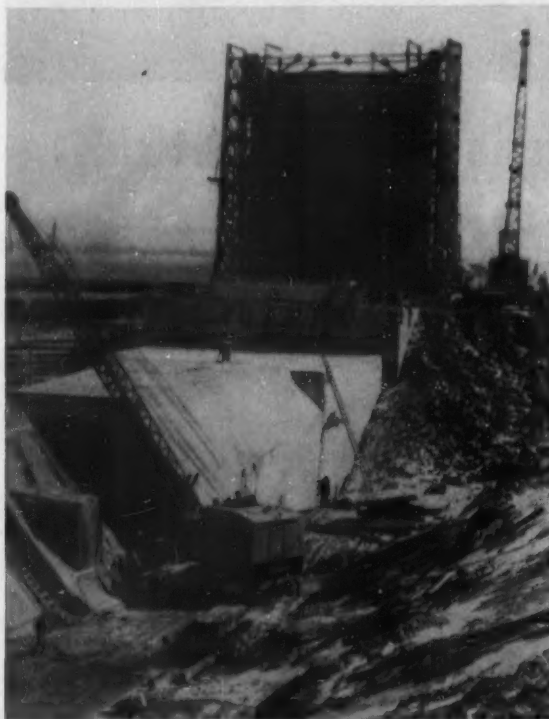
7859 UNIVERSITY AVE. S. E., MINNEAPOLIS 14, MINNESOTA

Construction News in Pictures



FORM USED 700 TIMES — Can anyone beat this record? This set of Symons forms with Douglas Fir plywood sheathing is used every day by Kozikowski Bros., New Britain, Conn., builders. Although the set has been used 700 times, and still is going strong, the plywood has not been reversed and the owner still is happy with the results. The long life of the forms is due primarily to the

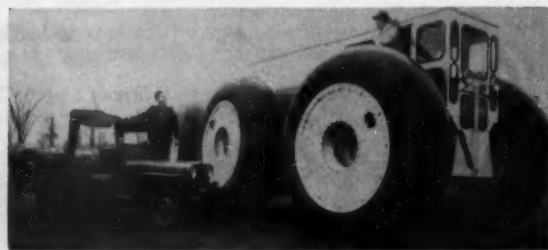
fact that they are being used under ideal conditions. They have not been taken from the one housing project; there is no trucking—only hand moving; they are used by the same crew day in and out, and the boss is one of the owners, so no one uses a wrecking bar for stripping. They are used practically five times weekly, don't dry out. Chuted concrete saves wear and tear, too.



TUNNEL GATE — That big steel gate in the background weighs 225 tons, is 45 ft wide, 58 ft high and will work against a head of 56 ft. It is one of two control gates at the entrance of the two tunnels that carry water from Niagara River, above the Falls, under the city of Niagara Falls, Ont., to the head pond of the Sir Adam Beck Niagara Generating Station No. 2 at Queenston. Each gate is lifted by two 10-in. steel screws 71 ft long, operated by a 40-hp motor.



STEAMING CONCRETE — Jet of steam precedes scraper blade, as workmen remove grease and paint from concrete at Carswell Air Force Base, Tex., preparatory to placing a new concrete overlay for apron strengthening (CM&E June, p. 78). Malsbary generator in background supplies steam.—Corps of Engineers photo.



GIANT TREADS SOFTLY — Willys jeep is dwarfed alongside amphibious vehicle developed by Gulf Oil Corp. for testing by the Army. An adaptation of Gulf's famous "Marsh Buggy," the monster rolls on 10-ft, 4-ply Goodyear tires for travel over dry land, deep mire, swamps and water. The big tires float the Buggy in water; rubber-cleated chains give locomotion. Should a tire become punctured, it would be kept inflated by a compressor which feeds in air through the wheel hub.

**ON THE
BANKS
OF THE
HOUSATONIC**

*...Shepaug Power Plant Progresses
"IN THE DRY"*



MORETRENCH WELLPOINT EQUIPMENT controls 29' of water in sand and gravel while United Engineers and Constructors, Inc., Philadelphia, excavate with speed and economy for the foundation of Connecticut's new water power plant near Sandy Hook.

Again and again, experienced contractors select Moretrench for pumping efficiency. For thirty years we've been solving pumping problems.

Let us help with yours. Whether it's large or small, we're interested.

Call our nearest office. Catalog on request.

**MORETRENCH
CORPORATION**

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New York 6

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Chicago 38, Illinois

7701 Interbay Blvd.
Tampa 9, Florida

315 W. 25th St.
Houston 8, Texas

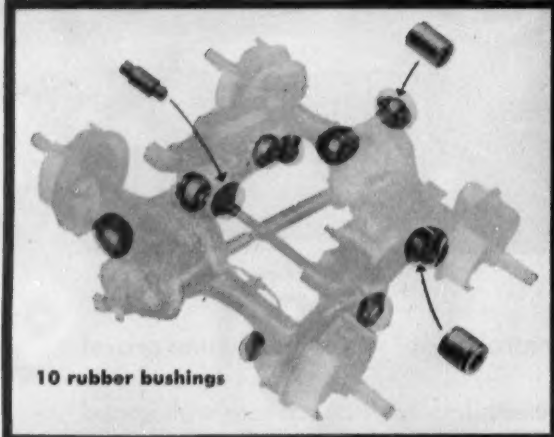
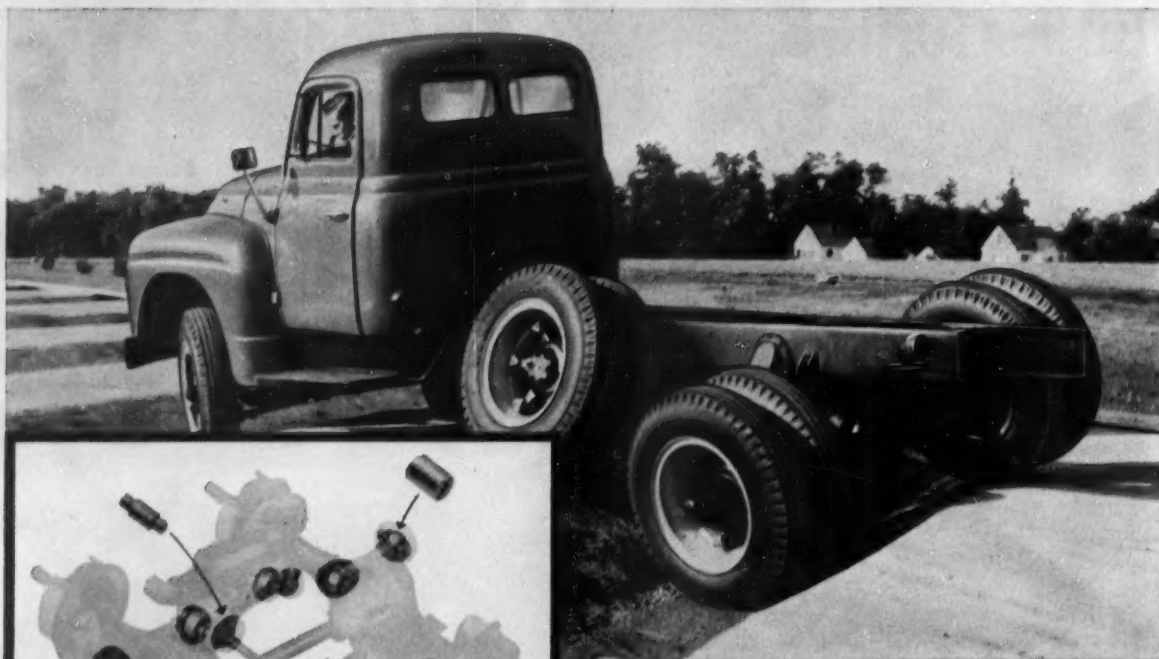
Rockaway
New Jersey

Western Representative: Andrews Machinery of Washington, Inc., Seattle 4, Washington

Canadian Representative: Geo. W. CROTHERS Limited, Toronto, Ontario

CHAMPION

of the 6-wheel field



Most advanced bogie in the 6-wheel field—bar none! That's the word for the new INTERNATIONAL bogie, here shown on the famous INTERNATIONAL "twist course." It features (inset) exclusive new straddle-mounted torque arm design. New lubrication-eliminating, shock-reducing rubber bushings. New, easier-serviced, protected air brake cylinder unit. Only INTERNATIONAL has it. Compare!

INTERNATIONAL Trucks have been sales leader in the 6-wheel field for 19 straight years . . . because of such extra-efficiency features as the power divider and third differential . . . because of low operating and maintenance costs in both bogie and truck provided by traditional INTERNATIONAL quality and extra-tough, truck-engineered components.

Today, INTERNATIONAL 6-wheel trucks are still champions, with a new bogie design that provides

unmatched ruggedness—further cuts costs—further lengthens axle and truck life.

INTERNATIONAL and only INTERNATIONAL gives you all these advanced bogie features, plus a range of models for every 6-wheel need. See your nearby Dealer or Branch for full facts and the complete INTERNATIONAL money-saving story. Time payments arranged.

INTERNATIONAL HARVESTER COMPANY • CHICAGO

24 SIX-WHEEL MODELS

22,000 to 90,000 Pounds GVW

All heavy-duty engineered, with wheelbases, transmission and axle ratios for every need. Engines from 130 to 356 h.p. Choice of gasoline or LPG power. Diesel engines available in models with GVW ratings of 30,000 lbs. and over. A part of America's most complete truck line—175 basic models, from ½-ton pickups to 90,000 lbs. GVW off-highway models.



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How to get BIGGER output on BIG trench hoe jobs



K-370 DEEP-DIGGING TRENCH HOE DELIVERS MORE YARDS PER SHIFT. Sewer jobs like this are completed faster because dig-swing-dump cycles are much smoother. Operator has perfect "feel" of load as he operates conveniently located short throw Speed-o-Matic levers. Gooseneck hoe boom gives superior digging-dumping action.

13,825

LINK-BELT SPEEDER CORPORATION, Cedar Rapids, Iowa

BUILDERS OF A COMPLETE LINE OF CRAWLER, TRUCK AND WHEEL-MOUNTED SHOVEL-CRANES

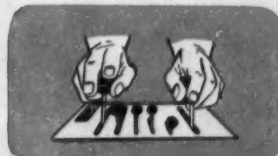
LINK-BELT SPEEDER

K-300 series machines offer
extra capacity and power
PLUS *Speed-o-Matic* control

FIELD reports show that outfits using K-300 rigs have a decided advantage in bidding and getting the BIG jobs—at a profit! Greater output does it!

Extra work capacity of K-300 rigs is a combination of many things. Speed-o-Matic power hydraulic control keeps operator far fresher, more alert all day. Means greater output—up to 25% more buckets delivered.

K-300's greater power (142 usable hp) speeds digging because it minimizes stalling, produces smoother swings. Add to this the stamina and more "live weight" that permit continuous operation under full power month after month. No wonder owners say the K-300 is the best producer money can buy! See your distributor or write for K-300 series literature now.



Speed-o-Matic is today's fastest, easiest-to-operate and most trouble-free control system. Now standard on all Link-Belt Speeders.



Note the size, weight and heft built into the working parts and structure. More "live" weight permits more efficient use of extra horsepower.

CONSTRUCTION 'ROUND THE WORLD



CABLEWAY WITH NET — The vast construction program of the Soviets in the development of water power on the Volga through the Kuibyshev Hydroelectric Station continues. Spe-

cial cableway carries aggregates from crushing plant to concrete plant for main sections. Exact purpose of "safety net" of wire mesh under travel path of buckets is not explained.—Sovfoto



ROCK HANDLERS — It's hard work feeding this crusher because the big ones are pushed on the feeder apron by hand. This portable crusher setup was purchased through a loan from the World Bank by Colombia to complete a network of roads in the Western Andes. Loan pays for both equipment and labor costs.—Eastern Publishers Photo Service



STORAGE IGLOOS — These concrete basins in the ground are 12 ft deep and have reinforcing steel protruding for the top section which will finish the spherical structures—erected by spraying concrete on an inflated balloon that later is removed. Bins are being erected for Jordan's grain storage under U. S. Point Four.—Wide World photo

UNIVERSAL Spirolocs

HEAVY DUTY TIES FASTEST—SAFEST—LOWEST COST



UNIVERSAL Spirolocs—
heavy duty Form ties...*Per-
manent, reuseable equip-
ment...fast acting Acme
threads...washers and stud
rods last indefinitely; only
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rods expended.*

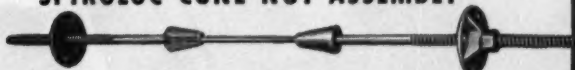
Spirolocs provide fast
erection...easy stripping...
available in various time-
saving combinations to fit
the exact needs of your job.

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**Greater Tie Strength
For less money with Spirolocs**

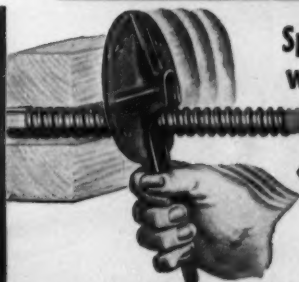
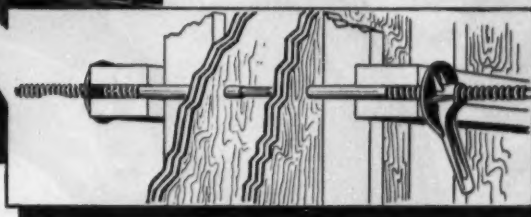
5,000# Ties with $\frac{3}{8}$ -Tie Rods
9,000# Ties with $\frac{1}{2}$ -Tie Rods
14,000# Ties with $\frac{3}{4}$ -Tie Rods
20,000# Ties with $\frac{1}{2}$ -Tie Rods

SPIROLOC CONE NUT ASSEMBLY



The only fast acting form Tie with an
absolutely positive spreader...assures
smooth surfaced, watertight walls.

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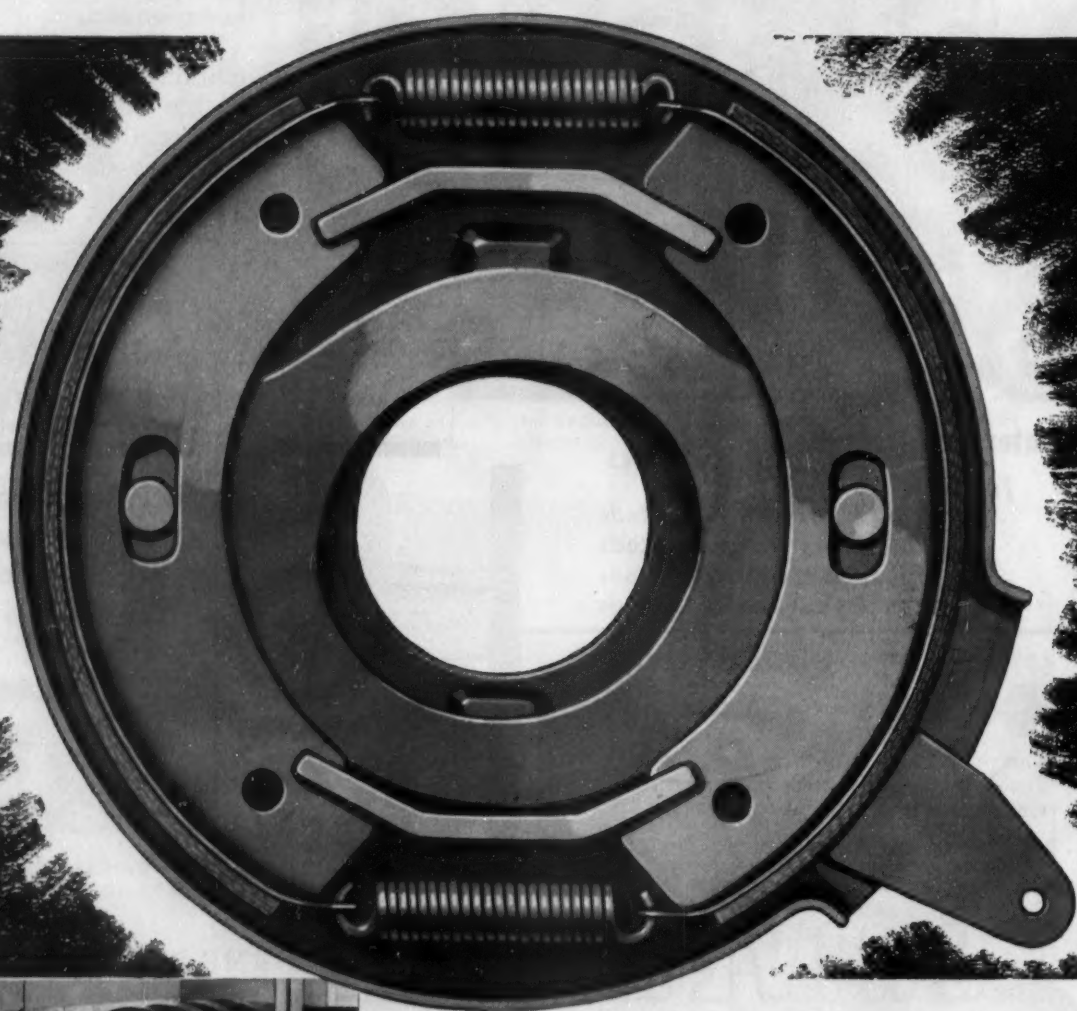


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TIMKEN-DETROIT

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For trucks, trailers, hoists, tractors, harvesters, cranes, buses,



Pre-proved in "Torture Tests"

Here's where TDA brakes are run through exhaustive tests on brake dynamometers in the world's most exacting "Torture Chamber." New materials and design features are con-

stantly being tested and developed for use in every type of product. Also, field tests are performed on all types of brake applications under every conceivable operating condition.



ANNOUNCES ALL-PURPOSE BRAKE!

shovels, mixers, machinery, etc.

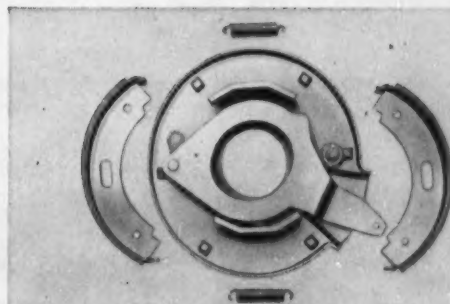
THIS BRAKE ALONE OFFERS YOU THESE 7 ADVANTAGES!

- 1 NEW SIMPLICITY!** Only 8 simple parts. Shoes and springs are completely interchangeable. For instance — brake shoes can be "slapped in." Position of the shoes makes no difference . . . it's *impossible* to install them incorrectly. Simplifies stocking — only 6 different parts required to completely replace the brake.
- 2 NO LUBRICATION REQUIRED!** Maintenance reduced to the absolute minimum. No skilled help needed because it's "fool proof" to service and install. No inside adjustment necessary.
- 3 ENCLOSED DESIGN** — protects against dust, dirt, water, contamination. Prolongs brake life, reduces fire hazard.
- 4 LIGHTEST WEIGHT!** This new development by TDA is in a class by itself. For example: the 13-inch drum size weighs only 40 lbs. as against 80 lbs. for an ordinary band brake!
- 5 LESS COST!** These brakes use lightweight stamped steel shoes of new design as against ordinary heavy, more costly cast shoes. Wear longer with increased braking power.
- 6 NEW BALANCED-TYPE DESIGN!** Exerts equal torque — in both directions. Balanced pressure makes both shoes do same amount of work. Brake linings have uniform wear pattern . . . constant, smooth performance.
- 7 FIVE TIMES LONGER BRAKE LINING WEAR,** proved in actual road and work tests. This means less maintenance costs for operators . . . less inventory to stock. For instance: one manufacturer plans to use *three* of these new brakes to replace *five* types now employed.

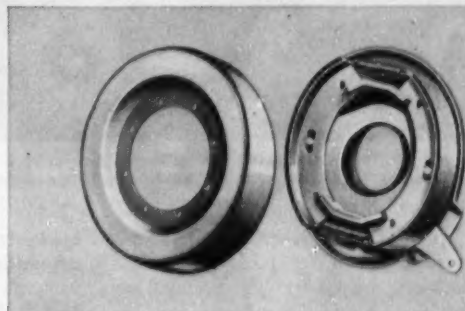
FREE! JUST OUT-HOW TDA CAN HELP YOU SOLVE YOUR BRAKING PROBLEMS!

Complete new literature now available on this revolutionary new brake. The result of 50 years of Timken-Detroit engineering experience . . . available in all sizes, for any type of work.

If somewhere in your business there is a special braking problem, big or small, we urge you to call on the ingenuity and vast knowledge of TDA engineers to solve it quickly — at low cost and without obligation. An inquiry on your company letterhead will receive immediate attention. Take advantage of this money-saving service now. Just write Timken-Detroit Brake Division, Ashtabula, Ohio.



Look how simple it is! No tricky assembly. Just remove two springs and lift out shoes. Anyone can put it together in minutes. No adjustment of brake required.



Here's the combination that gives this brake its outstanding superiority. Fewer parts to wear, to stock—longer life—less maintenance—lower cost.



CATERPILLAR

Speeding 4,000,000 yards of excavation on the Ohio Turnpike

A fleet of Caterpillar-built machines and engines is moving the total excavation on contract sections C-56, 57, 58, 59 of the nation's newest turnpike project. One overpass doesn't make a turnpike, but it helps explain how V. N. Holderman & Sons, Inc., is doing this big job.



LOADING TIME 35 SECONDS—and it's an all-Caterpillar performance. Loading a No. 20 Scraper is a Sierra loader pulled by a D8 and powered by a D318 Engine. The DW20s, with a 30-yard load, make the 1.8-mile round trip in six minutes and 20 seconds. They work six days a week, nine hours a day.

NEAR the western end of the 241-mile Ohio Turnpike, big yellow machines and Caterpillar® Engines are rushing to completion an important 14-mile section. The contract—approximately \$10,250,000—was won by V. N. Holderman & Sons, Inc., Columbus.

Among other things, it calls for moving 4,000,000 yards, nearly all borrow. Total borrow for the entire Turnpike is 30,500,000 yards, so Holderman is moving more than 10 per cent of the total.

To do this big job quickly, the contractor has called on a fleet of powerful Caterpillar equipment—four DW20s, four DW21s, 18 D8s, three D7s, four No. 12 Motor Graders, three No. 80 Scrapers, and three Cat® Diesel Engines to power a Sierra loader, a Lima crane and a Bucyrus-Erie dragline.

One job—an overpass—in section C-56 illustrates how Holderman is using Caterpillar teamwork to do the job. A Bucyrus-Erie dragline with a 2¼-yard

bucket is changing the channel of a stream to run into a box culvert. It is powered by a seven-year-old D17000 Diesel. Extent of repairs on this hard-working engine: one fuel pump. Not far away a D318 is powering a Lima crane unloading steel for the bridge.

A Sierra loader, powered by a D318 Engine and pulled by a D8, is loading three No. 20 Scrapers pulled by DW20s, which make a round trip of 1.8 miles in 6½ minutes. Nearby a No. 12 Motor Grader is grading, a D8 equipped with a No. 8A Bulldozer is leveling, and a D7 is pulling two sheepsfoot tampers.

And in the borrow pit a D8 is pushing loading three DW21s which haul to the fill near the bridge.

This fast, efficient, smooth-running Caterpillar combination is one reason that the Turnpike expects to be open to traffic by October 1, 1955. Holderman & Sons, like so many contractors, knows the many advantages of standardizing on Caterpillar equipment for profit-building performance.

Many engine parts are interchangeable, cutting down tremendously on the parts inventory. Operators and mechanics learn one make of machinery, and can get the most work out of it. And, most important, you get quick, efficient one-stop service from one dealer.

So follow the lead of road-building leaders. Be wise and standardize on Caterpillar equipment.

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS, U. S. A.

*Both Cat and Caterpillar are registered trademarks—®

True Public Relations

WHERE THE NEW YORK THRUWAY approaches the New York City line, its route coincides with one of the area's busiest existing highways. It is a foregone conclusion that traffic normally using this road will be inconvenienced—and seriously—during Thruway construction. But motorists and the local population will be more inclined to be tolerant with the contractor because of the latter's smart public relations program.

The joint-venture contractors, Corbetta Construction Co. & Yonkers Contracting Co., have taken half-page advertisements in New York City and suburban newspapers to explain what they're doing, and why. Under the heading "Forgive Us Our Trespasses," the ads frankly admit that one-way traffic, detours and delays can be expected. But they go on to point out what the completed project

will mean in added public traveling convenience.

Because the Thruway route was bitterly controversial, and tempers of near-by residents flared when it was announced, the contractors explain that they are not responsible for its selection but "we shall, as good soldiers, execute our given orders—and build it . . . to your eventual forgiveness and proud satisfaction."

How true is the ad's statement that "Very few residents adjacent to any major construction job ever find a good word for the prime contractor"! Yet it need not be. If, through an enlightened public relations program, the contractor can win the people to his side at the start of the job, he will be praised and remembered for the work accomplished rather than for the temporary inconvenience caused.

False Design Economy

MANY CONSTRUCTION PROJECTS start out costing the owner more than they should, while many more wind up causing the contractor unnecessary expense through no fault of his own. Designs that are unrealistic in the light of best construction practice force bids upward. Vague specifications and incomplete plans cause contingency figures to jump. And arbitrary interpretation of specifications and blind insistence that plans be followed to the letter can cost the contractor plenty, yet benefit the owner not at all. By thus keeping costs unnecessarily high, the whole construction industry is penalized.

Fortunately, most designs are good, and most engineers reasonable people. But now and then you run across an instance that makes you wonder if the designer has ever actually seen a construction job, or perhaps that the resident or inspector measures his success by the amount of trouble and grief he can cause the contractor.

What was the thinking on these recent jobs where pile-bent spacings varied by fractions of an inch and caused excessive formwork and concrete for the supported slab; where reinforcing in cast-in-

place batter piles had to be cut to different lengths because plans called for the top of the bar cage to be horizontal and the bottom normal to the pile shaft; where spacing of reinforcing was too close to let the specified concrete aggregate pass through and the contractor had to tear down the structure when honeycombing developed, as he had earlier predicted to no avail; where originally specified timber and concrete composite piles were insisted upon, even though rock showed up higher than expected and made the timber tips only a couple of feet long; where winches had to be set up to pull vibrating screeds along because specs called for "mechanical" finishing. And so it goes.

Many designs that prove uneconomical in the field result from a sincere desire to reduce the owner's cost—to save a yard of concrete here, a pound of steel there. However, if to eliminate that concrete requires extra-fancy formwork, if the steel saving causes unusual placing expense, then the savings become illusory. Sure, conservation of material is a worthwhile objective. But time and money and human sweat need conserving too.



Topped-out end monoliths, rising earthfill wings mark . . .

Folsom Dam Construction in Full Stride

IN SPITE OF DELAYS due to floods and other conditions beyond complete control, the \$29,400,000 Corps of Engineers Folsom Dam on the American River near Sacramento, Calif. is better than half-finished (See CM&E March, 1953, p.50). Soon the 1,200,000-yd concrete structure will be providing flood control, irrigation and power for the residents of that area.

Pouring of concrete is proceeding at the rate of 25,000 cu yd a week, which is a tribute to Eastern contractors Merritt-Chapman & Scott Corp. of New York and Savin Construction Corp., Hartford, Conn.

The power plant of 162,000 kw is being erected by Guy F. Atkinson Co. of San Francisco under a contract from the Bureau of Reclamation.

By L. L. WISE, Associate Editor

The dam's main concrete section will be 1,400 ft long with wing embankments of rock and earth fill extending its length to more than 2 mi. Height will be 340 ft with three penstock tunnels, each 15½ ft in dia., to feed water to the power plant.

At the completion of the dam the contractors will have excavated more than 9,000,000 cu yd of earth and rock and placed more than 800,000 cu yd for the wing dikes of the dam.

Of considerable interest at the project is the batch plant with its cooling facilities. It was designed by C. S. Johnson Co. and York Corp. provided the refrigeration equipment. Aggregate is air-

cooled and chilled mixing water is used. During extremely hot weather some of the mixing water is replaced by flaked ice and water-jacketed cement screws cool the cement. The concrete is mixed in 4-yd Koehring mixers. Workability, durability and impermeability of the concrete are enhanced by the addition of an air entraining admixture—Dewey & Almy Airalon.

D. E. Stinson is project manager for Merritt-Savin. Arthur Bartlett is concrete superintendent, and Bino Brovelli is earthwork superintendent. For the Corps of Engineers, Wm. J. Ely is district engineer; C. F. Beatie, project engineer; S. D. Burks, field engineer on the concrete dam and W. G. Clark, field engineer.



CLYDE WHIRLEY CRANE on gantry lowers another 4-yd bucket of concrete over the side of the trestle for a section in the rapidly growing dam. Loaded buckets arrive from batch plant on train below. Double-cantilever crane in background makes extra long reaches.

CN&E and Corps of Engineers photos

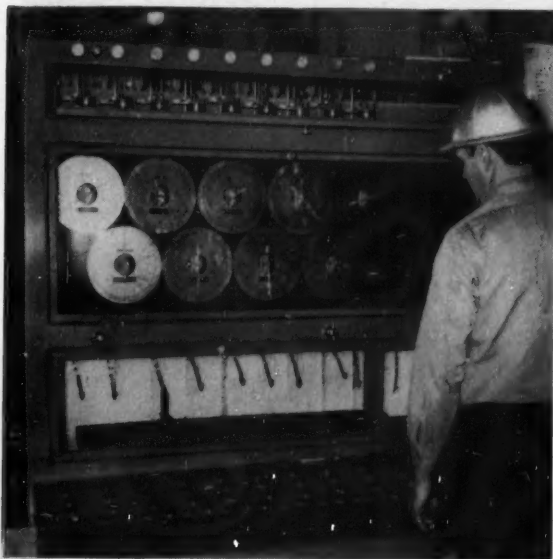


OPERATORS of Jackson electric vibrators stand back as another 4 yd of concrete is dumped. Note large cobbles in mix.

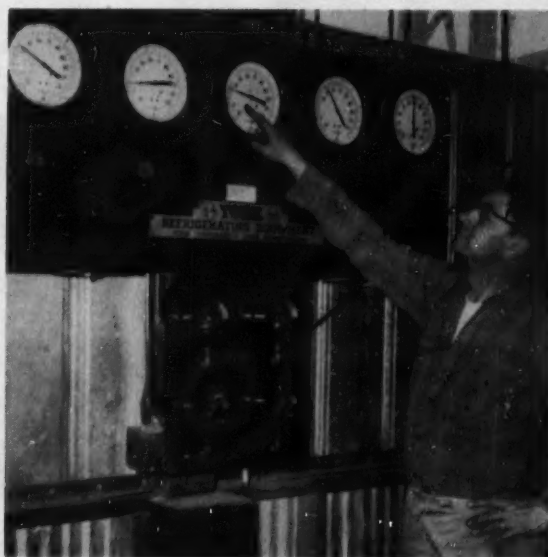


MACK TRUCKS hauled concrete for a time last year prior to completion of the trestle, permitting full use of traveling cranes.

(More photos on following pages)



PANEL BOARD and automatic batch-recording apparatus of Johnson batch plant indicate efficiency and accuracy of electrically operated plant. Concrete specifications are rigid.



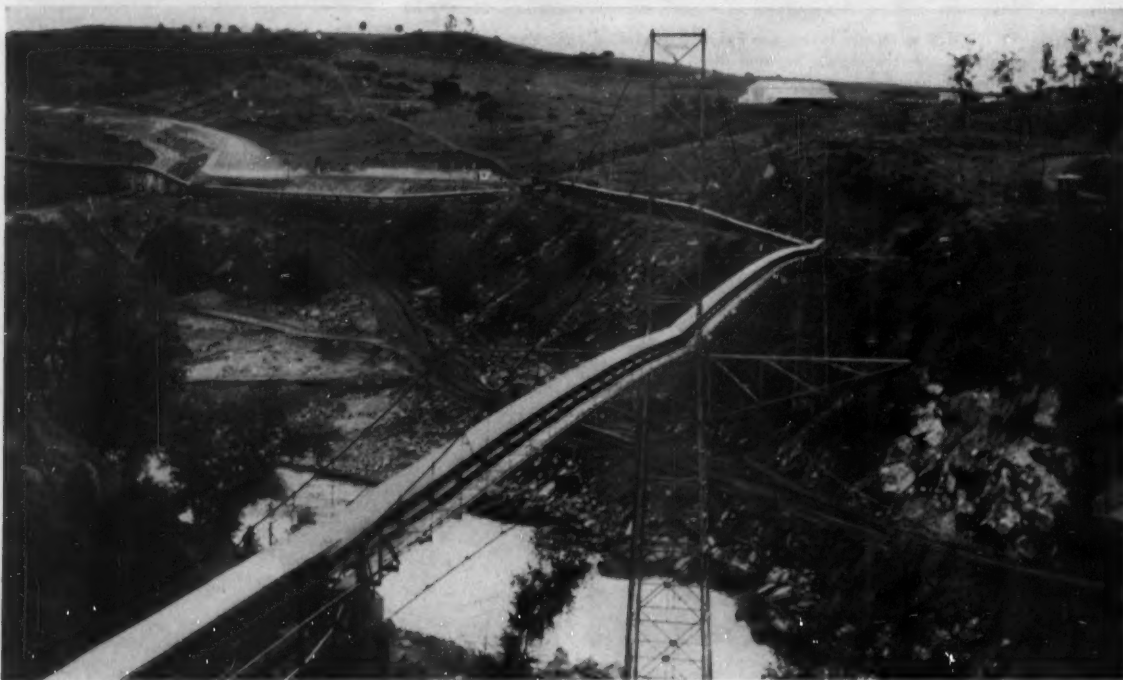
REFRIGERATION EQUIPMENT was engineered for the concrete plant by the York Corp. to provide 1,200 tons of refrigeration every 24 hr. Cooled air, water and ice are employed.

Downstream gravel screening plant...



SCREENING PLANT some 2 mi downstream of dam produces aggregate dredged from river. Materials are classified carefully,

brought to uniform moisture content, then hauled to long belt conveyor for delivery to concrete batch plant.



COVERED BELT CONVEYOR, a 3,300-ft-Barber-Greene installation, moves the aggregates brought up from the screening plant by trucks. It crosses high over the turbulent American River suspended from

two steel towers, then winds upstream to the left, finally making a steep climb to the top of the batch plant shown at upper right in the picture on page 54.

...delivers aggregates in big volume



WINDROWED GRAVEL on river bank—put there by big Manitowoc 4500 dragline—is loaded into Euclid bottom-dump by 2½-yd Northwest shovel, then hauled to screening plant.



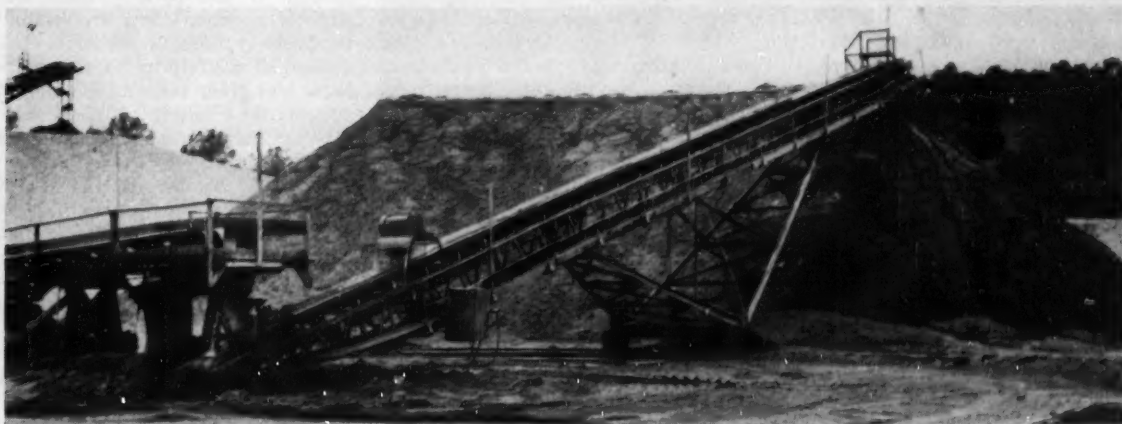
GRAVEL PRODUCTION continues steadily to assure a constant supply for concreting. This pile is at capacity and under-pile conveyor loads Euclid for haul to surplus stock pile.



CLASSIFIED GRAVEL is dumped into hopper bin over the receiving end of long belt conveyor for delivery to batch plant. Mack trucks make the routine gravel haul.



SAND IS PROCESSED by two Dorco sizars that blend materials properly to meet rigid specifications. Sand deficiencies in gravel are made up by D'Arcy rod mill which makes fines.



RADIAL STACKER at gravel plant roams over a wide arc to deposit sand, where it is left to drain thoroughly before being delivered to batch plant. Sand later is loaded out from dry side with a tractor shovel.

Under-pile conveyors are not practical here because of high moisture content inside pile. Barber-Greene units make up most of gravel plant equipment.



After holes are drilled through rock slab and grouted rods are tensioned...

Bolts Secure Slab to Canyon Wall

THERE'S A HUGE ROCK SLAB 19 ft thick, 180 ft long and 120 ft high, hanging on the canyon wall above the Nevada valve house at Hoover Dam. Until this year, a narrow open seam separated the slab from the rock abutment. But now, even though the mass seemed in no immediate danger of falling, the U. S. Bureau of Reclamation has made it doubly secure—nearly 350 2-in. bolts up to 33 ft long have been placed on 7½-ft centers both ways to anchor the slab to its parent rock. Also, the seam has been grouted through more than 170 holes, and nearly 50 drainage holes have been drilled to prevent any accumulation of water.

Selby Drilling Corp. handled the anchoring job for the Bureau under a \$112,000 contract that specified 375 calendar days for completion. But Selby finished the work 6 months ahead of schedule. Here's

how the Boise, Idaho, outfit cut working time just about in half:

First problem, of course, was to gain access to the nearly vertical face of the rock slab. For this, 11,000 lin ft of rented TubeLox pipe scaffolding was erected in 15 tiers on and above the valve house roof. Posts were set on 7½-ft centers longitudinally, and horizontal braces that also supported working platforms were placed 7½ ft apart vertically.

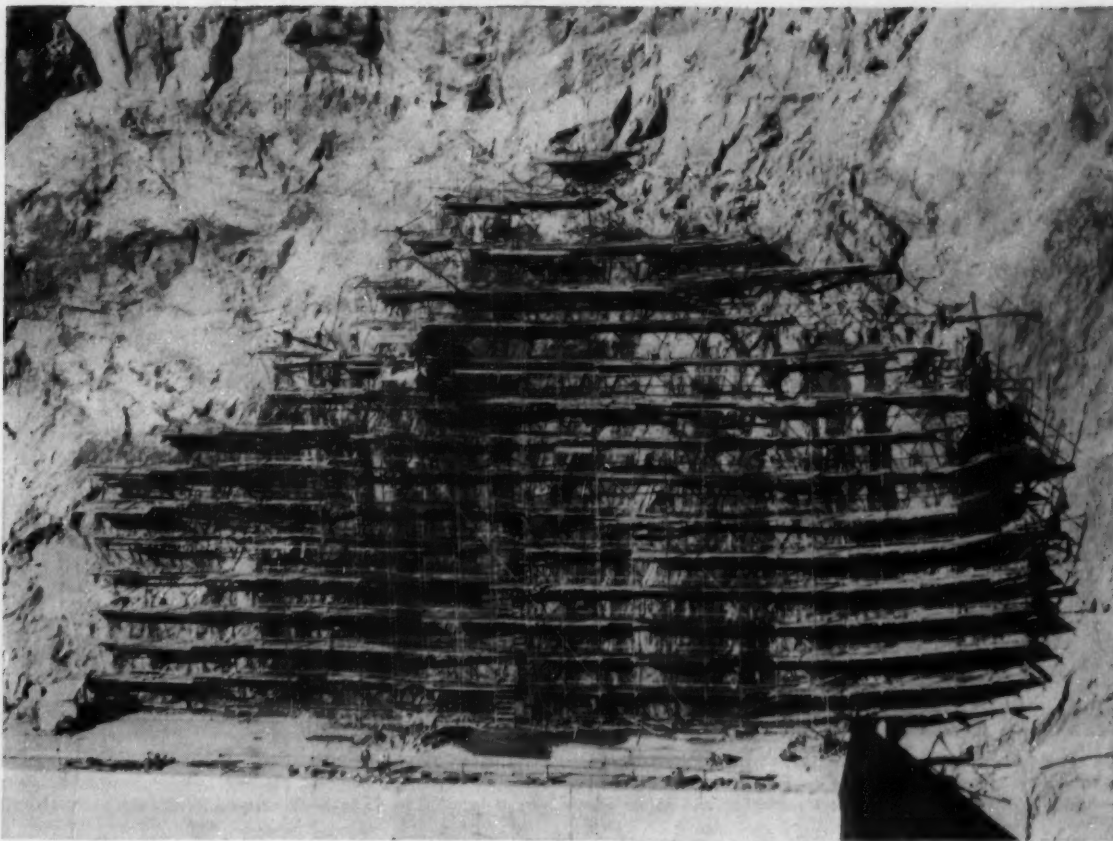
As the scaffolding rose, 1½-in holes were drilled in the rock with jackhammers. In them were set short steel dowels to which the scaffolding was tied with twisted strands of No. 9 wire. This made the TubeLox assembly so secure that drills for some 2,300 lin ft of grout and drain holes could later be mounted on bars attached directly to the tubular scaffolding.

Part of the slab extended beyond

one end of the valve house to make scaffold support even more difficult. In this area, 2½-in holes were drilled in the rock (which was slightly benched) and the scaffold tubes set in them. In addition, each section of scaffolding on the overhang was given some supplemental support by a length of ¾-in. wire rope anchored into the parent rock above the slab.

To raise equipment and materials to the various levels of scaffolding, three guyed steel pipe booms were installed high on the canyon wall. These were supplemented by 6x6-in. timber booms lashed to the scaffolding, as needed, or by simple hoisting tackle. All were operated by Gardner-Denver air tugger hoists.

From the scaffolding, 294 holes for the steel anchor bolts were drilled on 7½-ft centers (and 33 additional bolt holes were drilled



WALL OF SCAFFOLDING 180 ft long and 120 ft high covers face of rock slab above Hoover Dam valve house. Slab, 19 ft thick, is being anchored back into parent rock from which it is separated by a

narrow seam. TubeLox scaffold, supplied by Patent Scaffolding Co., provides 15 working levels for installation of anchor bolts and for drilling drain holes and grout holes to fill the seam.

from inside the valve house itself and 22 from the roof). Two Boyles Brothers JV drills with Christensen 3 $\frac{3}{4}$ -in. diamond core bits did the drilling early in the job, but later were replaced by two Gardner-Denver CF 99 drifters. Mounted on drill stands held in place by struts and by chains to wedge anchors in the rock, the drifters handled Timken carbide-insert bits (4-in. starter) on 1-in. hex, 3-ft sectional drill steel.

Holes were minimum 3 $\frac{1}{2}$ -in. dia at the bottom, and were drilled to at least 12 ft beyond the seam between slab and parent rock. This called for holes up to 32 ft deep (and a total of 8,000 lin ft of drilling). To keep the long holes true, drill steel was fitted with a 24-in. follower of 3 $\frac{1}{2}$ -in. OD pipe. Air for the drills was supplied by an electrically driven Gardner-Denver 500-cfm compressor placed near the valve house.

Each of the 349 drilled holes was to take a 2-in. dia anchor bolt whose outboard threaded end was upset to 2 $\frac{1}{2}$ in. The other end car-



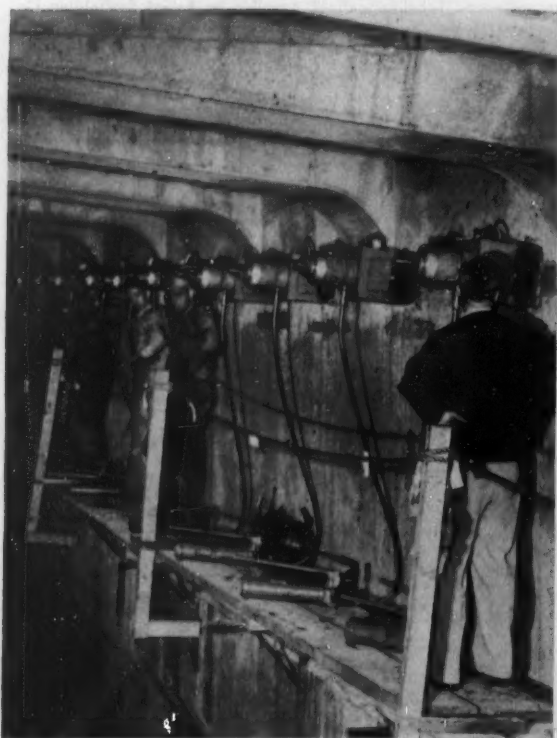
STAND FOR DRILL rests on scaffold platform, is held in place by rock anchors and struts. This Gardner-Denver drifter is sinking one of the 349 holes, bottomed out at 3 $\frac{1}{2}$ in., in which 2-in. anchor bolts will be grouted. Bolt-hole drilling totals some 8,000 ft.



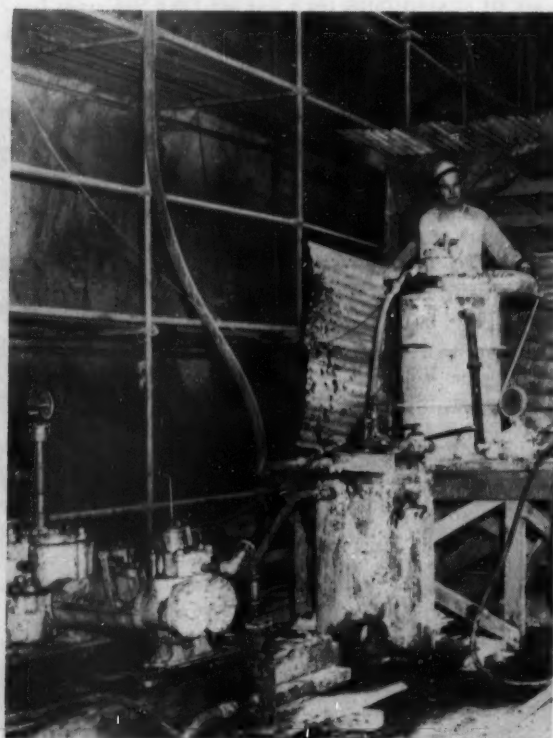
BOLT IS WRAPPED with paper (over that portion which will lie between seam and rock-slab surface) to prevent bond with grout. Other end is left bare for tight grout anchorage into parent rock.



BOLT IS HOISTED and slipped into drilled hole by guyed boom anchored to canyon wall and powered by air-tugger hoist. Bolts vary in length from 15 to 33 ft, carrying 2 1/2-in. nut on upset end.



BOLTS ARE STRESSED in groups of 10 by Simplex hydraulic jacks. Jacks load each bolt to 63,000 lb, then nuts are tightened to 2,000 in.-lb. torque. This line of bolts goes through valve house rear wall.



GROUT IS MIXED on valve house roof. Setup includes 10-cu ft mixer and hold-over tanks with air-driven mixer and agitator, and Gardner-Denver 5 1/4x3x5 piston-type grout pump.—USBR photos.



ROCK SLAB IS NOW HELD by bolts placed on 7½-ft centers both horizontally and vertically, as shown by pattern on canyon wall above Nevada valve house at Hoover Dam power plant. Slab was in no

immediate danger of dropping, but U. S. Bureau of Reclamation has anchored it permanently as a precautionary measure. Selby Drilling Corp. completed \$112,000 job in one-half allotted time.

ried a welded pipe sleeve, plus two sets of triple-fin spacers to keep the bolt centered in the hole in the parent rock. The portion of the bolt that was to extend from the seam to the surface of the slab was wrapped completely in paper to prevent bond with the grout that was to hold the bolt in place.

Grout was a rich cement-water mixture with about one teaspoon of aluminum powder added per sack of cement to insure expansion. After the bottom one-third of the hole was filled with this mixture, the prepared anchor bolt was forced into its proper depth. Then the rest of the hole was grouted full through a supply line temporarily fastened to the bolt. An air-operated chipping hammer held against the bolt's exposed end during this operation furnished sufficient vibration to guarantee complete embedment.

Grouted bolts were left undisturbed for at least 28 days before they were tensioned to anchor the rock slab in place. Tension was applied simultaneously to ten adjacent bolts by ten Simplex Remo-Trol 60-ton hydraulic center-hole jacks. Each bolt was loaded to 63,000 lb, after which its nut was

wrench-tightened to a torque of 2,000 in.-lb.

When all 349 bolts had been tensioned, the rock slab was pressure grouted on 7½-ft centers horizontally and 15-ft centers vertically through more than 170 1½-in. holes drilled to intercept the seam behind it. Final operation was to drill 40-odd 2½-in. holes in a 15x30-ft pattern. These were left

open to insure complete drainage.

Running the job for Selby Drilling Corp (a Morrison-Knudsen associate) was Peter Chesler, project superintendent. The work was done under the over-all supervision of L. R. Douglas, Bureau of Reclamation director of power for the Boulder Canyon Project, and Reupert Spearman, chief of civil engineering.

Pavers Cast Breakwater Blocks

GIANT BUILDING BLOCKS were cast by two Worthington pavers for construction of a 1,500-ft breakwater in the harbor of Zonguldak, Turkey. The portion of the breakwater requiring block construction consumed 1,500 variously shaped blocks, each weighing between 50 and 70 tons. Each paver had an elevating boom attachment and discharged concrete directly into forms in the casting yard, located conveniently nearby.

Forms were placed in rows on

the ground, and the pavers paused beside each row placing concrete in 1.4-cu yd batches. Then they moved along under their own power to repeat the process for the next row. One paver cast an average block in less than ½ hr. After curing for 24 hr, blocks were stripped and the forms re-set for another pour. About 50,000 yd of concrete were mixed and poured on the project. The contractor is Royal Netherlands Harbour Works Co., Ltd., of Amsterdam.



Lowering-in marks near completion of . .



TRENCH IS DUG to a minimum 5 1/2-ft depth by Buckeye ditcher to provide at least 3 ft of cover over 30-in. line. On steep slopes it's often necessary to hitch on a tow tractor to keep advancing.



ROCK IS REMOVED by Unit hoe after blasting, which is required on more than 10% of 640-mi line. Another 140 mi cuts through heavy forests that make it tough to clear the 60-ft right-of-way.

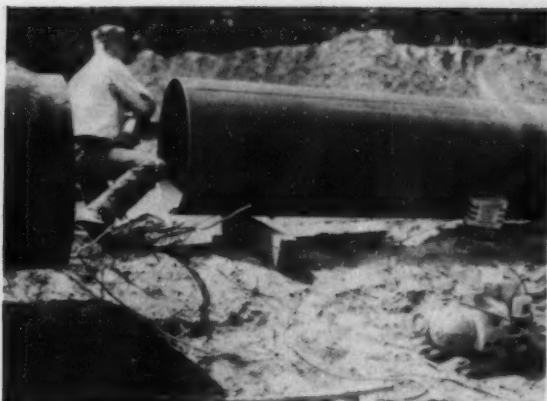
Biggest Oil Pipeline Laid in a Hurry

• Punched through northern Wisconsin and Michigan, down under the deep Straits of Mackinac and all the way across Michigan's Lower Peninsula, the 640-mi Lakehead pipeline extension from Superior, Wis., is now carrying Alberta crude oil to Sarnia, Ont. Its 30-in. dia makes it the largest crude line in the U.S. Rock, swamps and heavy forests—as well as more than 200 highway, rail and river crossings—made the job of laying the 30-in. pipe a tough one. But under Bechtel Corp., agents for Lakehead Pipe Line Co., the job was completed on a fast schedule.

Veteran pipeliners on the hurry-up project included: Anderson Bros. Corp., Houston, 195 mi; Bechtel Corp., San Francisco, 80 mi; Conyes Construction Corp., San Pablo, Calif., 175 mi; Mahoney Contracting Co., Lansing, 90 mi; and Midwestern Constructors Inc., Tulsa, 100 mi. Various phases of their pipelaying operations are shown here.



PIPE IS BENT in Cody hydraulic horizontal bender to conform to trench bottom. Some sections of line require as many as 50 bends per mi, which are made after pipe has been strung out along ditch.



END IS CLEANED by Thor electric buffer fitted with wire brush and driven by Homelite generator to prepare the joint for perfect weld. This operation takes place directly ahead of line-up.



LENGTH IS FITTED over internal line-up clamp that holds it while stringer bead is applied by first of three welding crews that follow close behind. Clamp's operating crank extends through pipe.

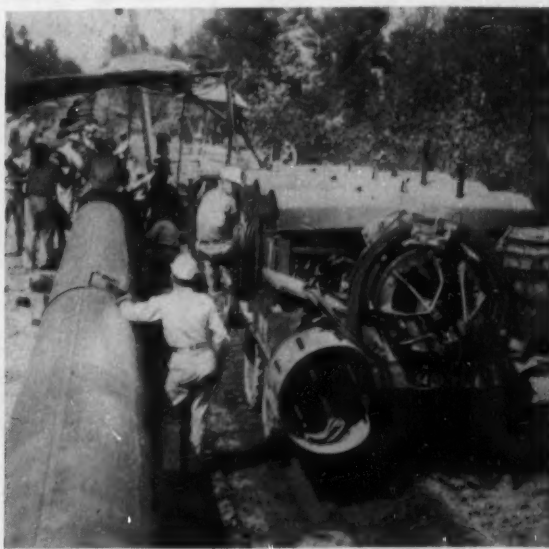


JOINT IS ADDED by Cat D7 with Trackson side boom while spacer waits in foreground to gage correct 1/16-in. root for single-V butt weld that will tie it into the line. Pipe lengths are 40 ft.

(More photos on next page)



SECTION IS CHECKED as CRC vertical bender makes pipe fit ditch contour. Pipe wall is 1/2 to 9/32 in. thick, depending on such pressure variants as hills and distance from pump station.



PIPE IS JOINED by three welders who make stringer bead with 5/32-in. Fleet 5 rod. GMC truck carries three Lincoln welders, as well as sun shade, H&M pipe beveler and spare line-up clamp.

BIGGEST OIL PIPELINE . . . Continued



JOINT IS WELDED FURTHER by two 2-man teams that add hot pass with 3/16-in. Fleet 85 rod, following stringer-bead crew. Four Lincoln welders are on sled pulled by Allis-Chalmers HD-15.



WELDERS ARE LEAPFROGGED AHEAD by Ford tractor as filler and cap beads are completed farther back down the line. Rods for this operation, completing joint welding, are 3/16-in. Fleet 85.



PROGRESS IS SLOWED by swamps, more than 100 mi of which must be crossed. These Lincoln welders with GM diesels will have to be moved ahead by crawler tractor when welds are completed.



LINE IS SCRUBBED by rotating wire brushes of Crosse cleaning machine that also applies prime coat of coal-tar enamel as it propels itself along pipe. Progress is about 3 mi per 10-hr day.



FINAL PROTECTION IS ADDED by Perrault coat and wrap machine that applies hot coal-tar enamel (from kettle at right) and two layers of glass fiber cloth. Machine covers 1 1/2 mi of pipeline daily.



SUPPLIES ARE TOWED alongside wrapping machine by same side-boom tractor that helps to cradle pipe. All seven pipelaying spreads use same basic methods and equipment, but brands often vary.

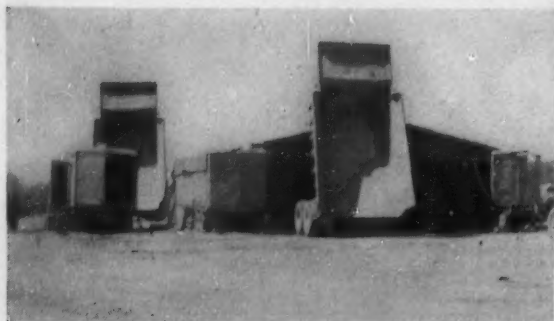


Four Cranes Emcee Bridge Girder Installation

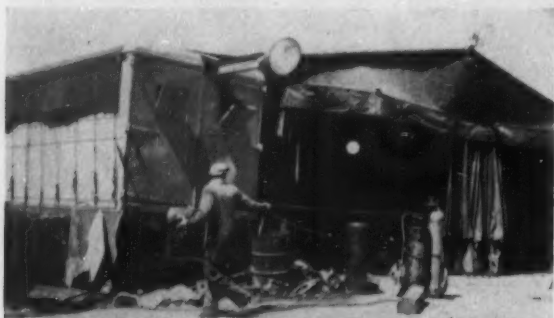
FOUR P&H 35-ton mobile cranes loaded and set four 125-ton plate girders—said to be the largest ever built on the West Coast—for a Pacific Electric Railroad bridge crossing over a freeway that will connect Los Angeles and Long Beach, Calif.

The girders, 130 ft long, 30 ft high, were fabricated by Vinnell Steel Co., Inc., from $\frac{3}{4}$ - to $1\frac{1}{8}$ -in. thick steel plate.

Belyea Truck Co. transported the girders 24 mi from the Vinnell plant in Baldwin Park, Calif. to the Dominguez Bridge site on the Long Beach Freeway. Belyea-built, heavy-duty dollies were towed by a Sterling 3-axle tractor. The Heisler & Woods Crane Service supplied the cranes for loading and setting. Contractor on the project was Webb and White Construction Co. of Los Angeles.



WESTERN CONTRACTING CORP. maintenance shop is canvas-roofed area between storage and repair trailers doubling as walls.



CANVAS ROOF covers steel framing resting on trailers. Note canvas draw curtain, extending monorail, and mishandling of hose.



FAST-STEPPING MECHANIC almost obscures welding machine hung below trailer. Shop also is fitted with Yale 2-ton electric hoist.

Trailer Shops Sprout on Turnpike



GREASE RACK for maintenance of job's highway-type trucks is placed behind repair shop, whose custom-fitted tent covers front of shop vans. Lube van (left) stores extra drums.



BADGETT-CENTRAL-SOO set up 60x60-ft central shop whose roof is supported by repair van and warehouse van. In front are Dodge wagon with Hobart welder, and Ford mechanic truck. Chain hoists hang from monorails inside shop.

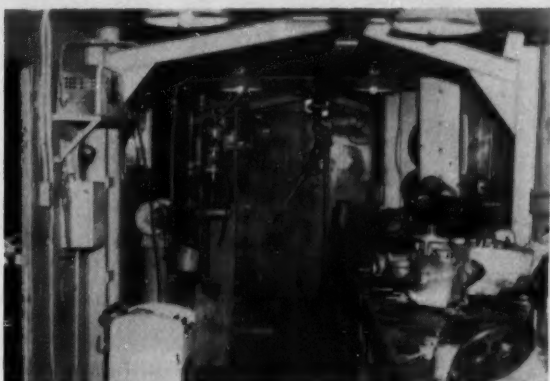
HIGHWAY TRAILER VANS form the nucleus of some of the most efficient equipment maintenance setups on the fast-paced Ohio Turnpike. Not only do the vans carry parts, supplies and tools to the site at the start of the job, but they also remain to serve as shop buildings and warehouses.

Western Contracting Corp. (of Sioux City, Iowa) which is building 9 mi of the Pike, has perhaps the most unusual setup—it's centered around six converted 35-ft Gramm vans. Two of the semi-trailers are combined lubrication shops and powerhouses, two are repair shops, two are warehouses. Actually, one each of these units makes a single self-contained maintenance facility, and Western uses that setup on smaller jobs. But the size of the Turnpike operation made it advisable to double the service layout, so the two groups of trailers are set side-by-side to make twin maintenance facilities.

For each setup, Western first poured a concrete floor slab about 35x50 ft. A repair-shop van and a warehouse van are parked on this, parallel to each other and 35



LUBE VAN operates in conjunction with repair shop, supplies electricity to latter from its 30-kw Caterpillar generator.



REPAIR VAN is well equipped with tools and facilities for all but largest jobs. Coffing Safety-Pull hoist hangs from monorail.



STORAGE VAN stocks small parts and supplies in neat bins. It also carries complete set of manufacturers' maintenance manuals.

ft apart, to make two walls of the shop. The trailer roofs are fitted with supporting brackets that hold pipe framing for a roof over the 35x35-ft clear working area between units. A custom-made canvas tent, draped over the framing and lashed to the outboard sides of the trailers, makes a tight roof and also closes one end of the shop. The other end is fitted with sliding canvas curtains. To complete the water- and wind-tight enclosure, tarpaulins are draped from trailer floor level to the ground outside.

Both repair and warehouse vans are fitted with side doors and open-grate steps leading into the shop tent. Each also carries a ceiling-height monorail that extends from one end to the other and out the rear door. Hoists on the monorail can pick material from delivery trucks and carry it inside to be worked on, or stored.

... Warehouse Van

Inside, the storage trailer is fitted with racks and bins for small parts and supplies. It also carries a Motorola two-way radio. Slung from the underside are spindle racks for reels of wire rope, and other racks for holding such spares as cutting edges and track plates.

... Repair Van

The repair trailer is more elaborate. Mounted inside are a 60-ton Manley hydraulic press, Black & Decker 6-in. grinder, Sioux $\frac{7}{8}$ -in. drill in stand, Hall valve refacer, Kathanode and Tungar (GE) battery chargers, vises, tool bins and a storage rack of roll gasket material. A work bench with tool cabinets beneath extends along one wall. Suspended beneath the trailer are a Lincoln welding machine and a rack for holding batteries while they are being charged.

... Lubrication Van

Parked alongside the repair van is the lube-power trailer. One end is given over to a Caterpillar diesel-driven 30-kw generator and necessary switch gear that furnishes all electricity for the shop's tools, radio, lights, welder, and chargers. To handle oiling and greasing, the trailer carries an electrically driven 30-ft Ingersoll-Rand compressor that operates Lincoln lubrication equipment.

The second three-trailer shop setup is similar, and the two facilities sit side-by-side a short distance apart. In the center of the space between them is the job fuel tank. Thus a machine needing

service can drive between the tank and one of the flanking lube vans and have all its wants attended to quickly.

... Other Trailer Shops

The same general scheme—setting up repair and warehouse trailers and roofing the space between to make a shop—is used by Badgett-Central-Soo of Winona, Minn. But the two vans of this combine, which is handling 12 mi of the Pike, are 60 ft long and are placed 60 ft apart. This 60x60-ft shop area, floored with concrete and roofed with corrugated metal over steel trusses, is large enough so that only one is required. The trailers themselves carry much the same equipment and supplies that Western's do.

Other exponents of trailers, but who use them individually rather than tied together into a shop, are Holloway & Thompson Construction Co. (Livonia, Mich.) and Johnson-Greene Co. & Sargent Construction Co. (Ann Arbor). The former uses them as an adjunct to a central job shop, parking them right where the machines are working and moving them along as the equipment spread advances. The latter sets its trailers up in one central spot for the duration of the job.

50% More HP Claimed With New Belt Drive

HERE'S A NEW IDEA in belt drives that may answer some of the present drive problems in the construction field. It's called Poly-V-Drive and it's made by the Manhattan Rubber Division of Raybestos-Manhattan, Inc., Passaic, N. J.

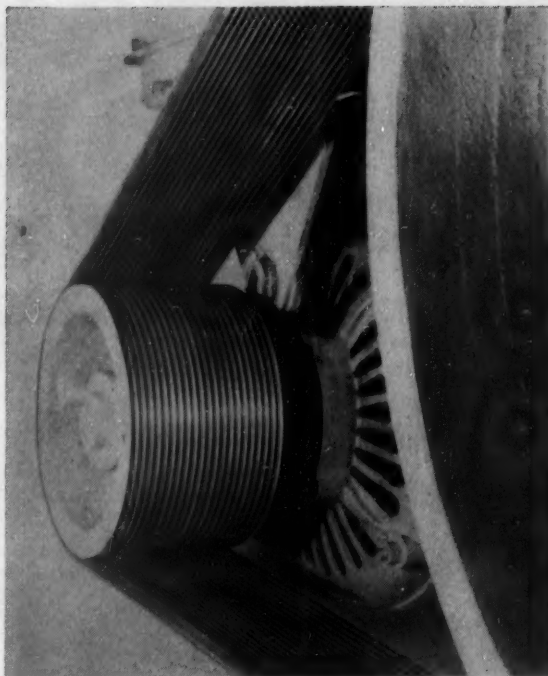
It's a single, endless rubber belt made up of a series of parallel V's molded lengthwise around the inside surface that rides over a sheave with corresponding grooves. This arrangement, it is claimed, results in twice the contact area of a comparable multiple V-belt drive. This feature, plus the strength member of synthetic cords that run the full width of the belt, can give 50% more power in the same width drive. Or you can get the same horsepower from a drive that is one-third narrower.

According to the engineers who designed and developed the drive, it will have greatest use as a high-capacity, high-speed drive because it combines the simplicity and strength of the flat belt with the high V-groove grip of V-belts.

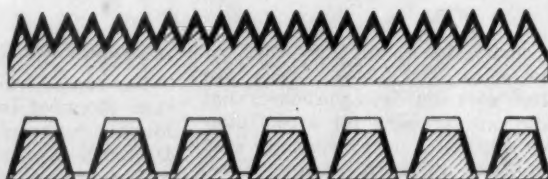
Another advantage is that this Poly-V being a single belt will eliminate the usual matching problem. Then, too, because the V-ribs on the new belt fill the sheave grooves, sudden shock loads cannot pull the belt further into the sheave, causing high-face pressure wear. The speed ratio is constant, and no shoulder or rings develop in the grooves.

One tractor manufacturer reported the fan belt drive life doubled when changed to the new Poly-V-Drive.

The belts and sheaves sizes to fit the needs of heavy-duty power transmission belt requirement are now in production. Prices are comparable to V-belts.



THE POLY-V RUBBER BELT is a series of parallel V's moulded lengthwise to ride on a sheave with corresponding grooves. It's claimed this belt and sheave can give 50% more power.



THE POLY-V rubber belt cross-section at top, as compared to the V-belt below. The heavy lines show the difference in contact area in the sheaves. The new belt has high strength and flexibility.



THE BELT is a single unit across full width of sheave and not an assembly of several V-belts. This arrangement is said to give twice

the contact area with only half the face pressure. The belt position remains constant under all conditions.

PUT NEW PROFIT IN CUTTING CONCRETE!

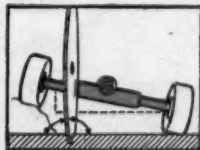


Clipper
CONCRETE SAW

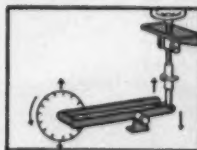
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MODEL C-250
One of 6 Models
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Self-Propelled ... and powered by 25 Horsepower ... Clipper's new C-250 "ConSawMatic" cuts the MOST concrete for the LEAST cost per foot! Exclusive 3-Point Suspension on rugged 4-wheel chassis eliminates blade binding, reduces wear. Improved Screw Feed for **positive** Depth Control, essential with new GreenCon Abrasive Blades. Easy to handle, gets you "on the line" fast, ready to cut in a hurry. FREE TRIAL will show you why "4 Out Of 5 Buy Clipper"



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NEW Diamond Blades by Clipper—cut ANY concrete. There's new ease and speed in Clipper's **improved blade specifications**...for cutting green, cured or aged concrete. A blade for any job—any aggregate—every saw!



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ELECTRO-OSMOSIS SYSTEM is installed to dry up and stabilize a bank of soft wet clay. Electrodes are driven into slope, and 90-v direct current from generators in foreground will be fed to them to drive water from anodes to cathodes and out of the ground.

PART WAY THROUGH foundation excavation for two new generating units at the Joppa (Ill.) Plant of Electric Energy Inc., the bank at one end of the cut started to move in. The material was a hard-to-hold soft wet clay, but electro-osmosis—a means of developing tension in the soil by passing direct current between electrodes driven into the ground—increased the clay's shear strength five times, as measured by a Swedish vane. It dried and firmed up the treacherous material to change a difficult excavation into an easy one.

The stage was set in 1951-52

Electricity Stiffens Clay Fivefold

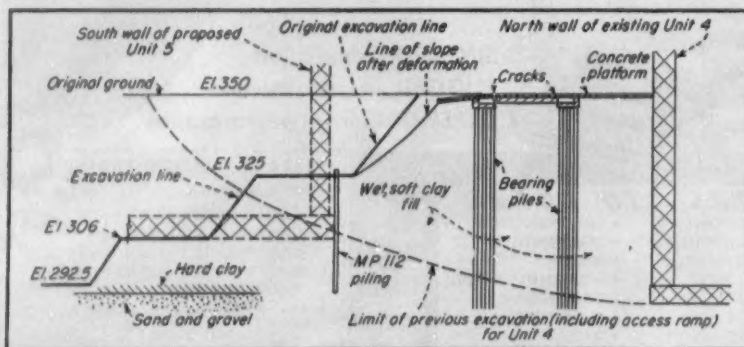
when Joppa's first four generating units were built. Their foundations were placed at El 285 on a sand and gravel stratum some 65 ft below general site grade at El 350. The units were built along a north and south line perpendicular to the Ohio River, and a ramp led into the 65-ft excavation from the north end.

On completion of Unit 4's foun-

dation, the area was backfilled to grade with a soft clay, the only available material. The clay was loosely dumped and the backfill was full of voids in which surface water could accumulate to cause gradual swelling of the more-or-less remolded clay. No attempt was made to place the fill in layers and compact it. Later, bearing piles were driven through this backfill to carry crane rails and stator paths extending northward from Unit 4.

In 1953, excavation for Units 5 and 6 was started at the north end and carried southward toward Unit 4. Bottom of cut varied from El 306 to 292, with the banks sloped sufficiently to stand unaided. Because the existing crane rails and stator paths at Unit 4 limited the excavation at the south end of Unit 5, it was not possible to slope the bank completely in this area. Instead, it was planned to open-cut this end from El 350 to 325 only, then drive steel sheeting to hold the rest of the excavation down to final grade at 306.

Upon excavating the south slope of Unit 5 down to El 325, the soil



TYPICAL SECTION shows how unconsolidated clay backfill placed for Unit 4 complicated later excavation for Unit 5. But electro-osmosis system installed throughout 75x150-ft area south of sheetpiling let rest of cut be taken to El 306 without further bracing.



BANK OF UNSTABLE CLAY at rear has started to move into partially completed excavation, prior to electro-osmotic treatment. Cut still has to be taken down 19 ft deeper at far end by removal of the berm and bench on which crane at left is traveling.

for Electric Plant Excavation

By **RICHARD LOUGHNEY**,
Soil Engineer, Wellpoint Dewatering Corp.

moved toward the cut so much that bearing piles for the crane rails were sheared off, permanent steel sheeting around the craneway ends was displaced, and a ground-level concrete slab cracked and settled as much as 1½ ft due to loss of soil.

A 140-ft line of MP-112 steel sheetpiling (the only section immediately available) was driven across the face of the slope. It was driven 4 ft outside the neat line of Unit 5, and extended from El 325 down to 290. With 19 ft of excavation still to go, and with the bank already moving in toward the hole, it was apparent that some method of stabilization or containment of the slope would be required before digging could be resumed.

So far, movement of the slope had been forward. But the real danger lay in the entire mass of backfill sliding up into the excavation when the counterbalancing weight of the berm, which extended

(Continued on page 74)



SHRINKAGE CRACKS DEVELOP as electric treatment down to El 300 dries and stiffens clay into a stable material. Anodes (pipes with rods inside) and cathodes (special Griffin wellpoints) alternate on 5-ft centers. Cathodes are pumped to remove the water collected.

Across the board ...the choice is



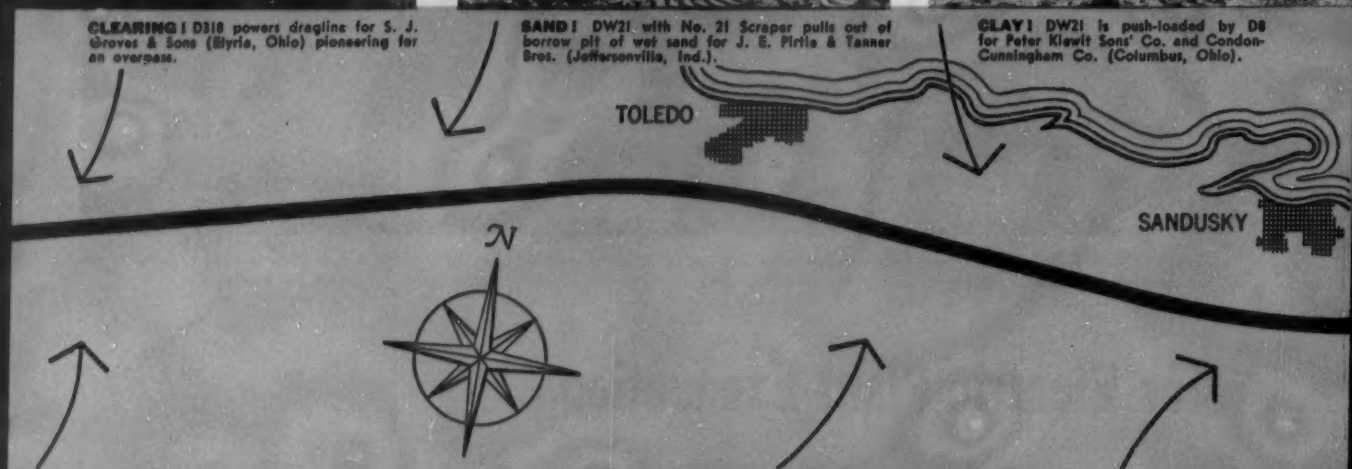
CLEARING! D318 powers dragline for S. J. Groves & Sons (Wyria, Ohio) pioneering for an overpass.



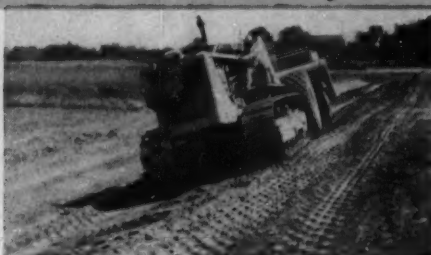
SAND! DW21 with No. 21 Scraper pulls out of borrow pit of wet sand for J. E. Pirila & Tanner Bros. (Jeffersonville, Ind.).



CLAY! DW21 is push-loaded by D8 for Peter Kiewit Sons' Co. and Condon-Cunningham Co. (Columbus, Ohio).



MUD! D8 equipped with No. 8A Bulldozer working in clay at overpass for V. N. Holderman & Sons (Columbus, Ohio).



DRAINAGE! D8 with No. 80 Scraper maintains ditch alongside fill on Winston Bros. Co. (Minneapolis) contract.



HAUL ROADS! No. 12 Motor Grader maintains road for Holloway & Thompson Construction Co. (Livonia, Mich.).

Over 50 contractors are pushing the nation's newest turnpike to completion through sand, bog, clay and rock. As one man, they've turned to big yellow equipment. Eighty-five per cent of their crawlers, 83% of their motor graders are Caterpillar—over 650 pieces of earthmoving equipment in all!

The roster of contractors at work on the Ohio Turnpike reads like a blue book of America's road builders. And from one end of this \$326 million road to the

other, they have given Caterpillar the biggest vote of confidence in road building history.

Collectively they have more than 650 pieces of Caterpillar-built earthmoving equipment on the job—and that doesn't include scores of CAT* Diesel Engines and Electric Sets. *They have far more Caterpillar equipment at work than all the other makes put together!*

Yet there is no pattern in the type of work being done by this tremendous fleet of Caterpillar equipment. For on its 241 miles, the Ohio Turnpike presents every possible type of terrain and soil—from river bottom to mountains, from quicksand and bog to clay and rock.

on the Ohio Turnpike Caterpillar



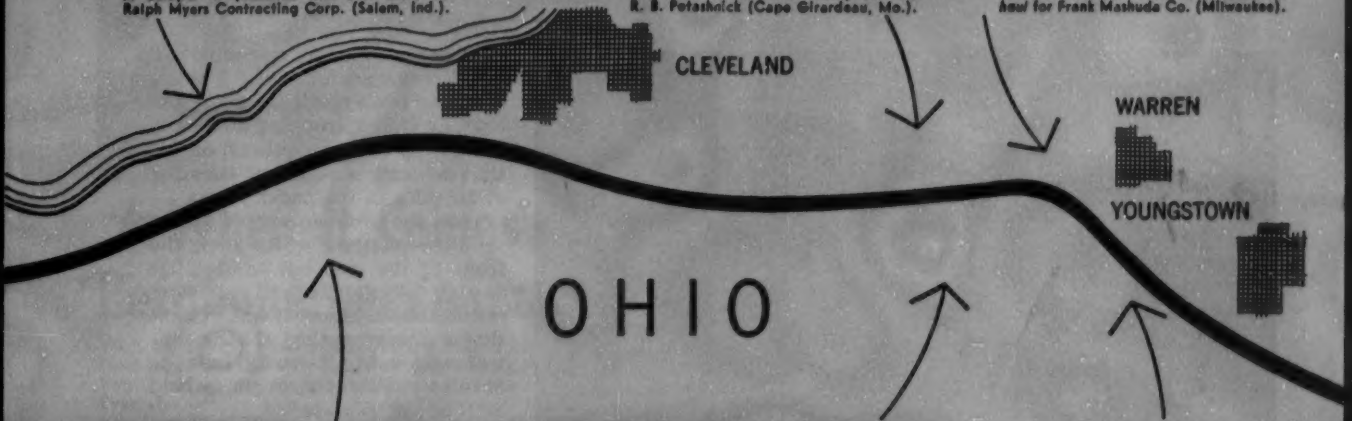
QUICKSAND! D8 push-loads DW21 and No. 21 Scraper in quicksand over blue shale for Ralph Myers Contracting Corp. (Salem, Ind.).



ROCK! D8s in tandem push-load DW21 and No. 21 Scraper in rocky soil for R. B. Potashnick (Cape Girardeau, Mo.).



LONG HAULS! DW21 with W20 Wagon carries shale and rock on a four-mile haul for Frank Mashuda Co. (Milwaukee).



HIGH-SPEED HAULING! The first DW21 ever built still does high-speed hauling for Nick Cenci & Sons (Columbus, Ohio).



CRUSHING! D8 loads portable gravel plant powered by D337 for W. J. Menefee Construction Co. (Sedalia, Mo.).



GUMBO! No. 90 Scraper, pulled and push-loaded by D8s, works in gumbo for Harrison Construction Co. (Pittsburgh).

It is an amazing demonstration of the versatility of big yellow equipment. There are 450 Cat track-type Tractors alone — 346 are D8s! That represents 85% of all the crawlers at work on the project. Eighty-three per cent of the motor graders at work are Caterpillar, and 60% of the rubber-tired tractor-scraper units.

Heavy-duty, dependable Cat Diesel Engines are powering draglines, clamshells, shovels, backhoes, crushers, compressors, loaders. And through long, dark second shifts, Caterpillar Electric Sets are producing the electricity for flood-lighting and contractors' service shops.

Never before has there been such a testimonial to one make of equipment as this 650-unit fleet. Now's the time to follow the lead of road building leaders.

Start standardizing on Caterpillar equipment!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Both Cat and Caterpillar are registered trademarks—®

**WORLD'S NO. 1
ROAD BUILDER**



BEFORE ELECTRO-OSMOSIS TREATMENT wet clay bank deformed from as-excavated 45-deg slope to curved and flatter slope, part of which was covered by tarpaulins to keep rain out (top photo). Ground moved so much that permanent steel sheeting around crane way ends was displaced (top), soil cracked and subsided severely (middle) and concrete bearing piles beneath crane rails were sheared off (bottom). One slab settled as much as 1½ ft.

40 ft beyond the toe, was removed. Berm removal would let the entire soft-clay bank rotate, with the soil back by Unit 4 dropping down and coming up into the excavation for Unit 5—with a resultant shearing of all piles in the backfill area.

Thus the problem wasn't just to stabilize a narrow width along the front of the cut, but to stabilize enough of the backfill mass to counter the rotation. It was evident that whatever method of bank control was used, it would have to develop sufficient strength to hold 50 ft of soil in place.

Electro-osmosis did the trick: Wellpoint Dewatering Corp. drove more than 300 electrodes into the unstable bank and applied a current at 90v dc to the system, thus driving the soil's pore water from anodes to cathodes and out of the ground, with a resultant tension being developed throughout the soil. (For a discussion on how and why electro-osmosis works, see "Electric Curtain Stabilizes Wet Ground", CM&E, April '53, p 52).

The electrodes were installed across the face of the slope for a length of 150 ft and to a width of 75 ft behind the line of steel sheet-piling. They were driven to penetrate to El 300, which called for lengths varying from 25 to 50 ft, depending on their position in the slope. Anodes and cathodes alternated on 5-ft centers in a checker-board pattern, except for one complete line of anodes directly behind the sheeting plus a matching line of cathodes 5 ft back.

Anodes were 1½-in. standard black pipes with a 1-in. reinforcing rod driven down inside them. Cathodes were 1½-in. Griffin wellpoints (Continued on page 78)



★ When It Comes to Loading the Big, High Ones Pettibone SPEEDALL Has Height and Reach to Spare!

With 11 ft. 7 in. clearance under the bucket hinge when fully raised, you can see why bigger hauls are being loaded with the Pettibone 1½ cu. yd. Speedall Front End Loader on the job. Even the smaller 1 cu. yd. Speedall clears 10 ft. 2 in.! Reach from front tires? Look at this: at 8 ft. dumping clearance the 1½ cu. yd. reaches 3 ft. 5 in.; the 1 cu. yd., 3 ft. 4 in. Compare this with others and you'll buy Speedall! Write for free bulletin.



TROUBLE-FREE, BALANCED-DESIGNED FRAME

No front end loader—no, none—has as much built-in stamina and ruggedness as Speedall. Take a look at Speedall's clean lines. Examine its husky, balanced designed frame—no counterweights are used! Heaping bucketfuls, gathered with smooth torque converter power, are, therefore, routine with Speedall!



OPERATOR ALWAYS SEES WHAT'S GOING ON

Fast, accurate loading is assured because the operator is "on top of his work." Spotting what's to be loaded and dumping it is a cinch—no wasted time groping for position! Four wheel drive, rear wheel steer, four big flotation tires—these, too, help even the inexperienced operator look good on a Speedall!

★ Torque Converter Is Standard!

PETTIBONE SPEEDALL Front End LOADERS



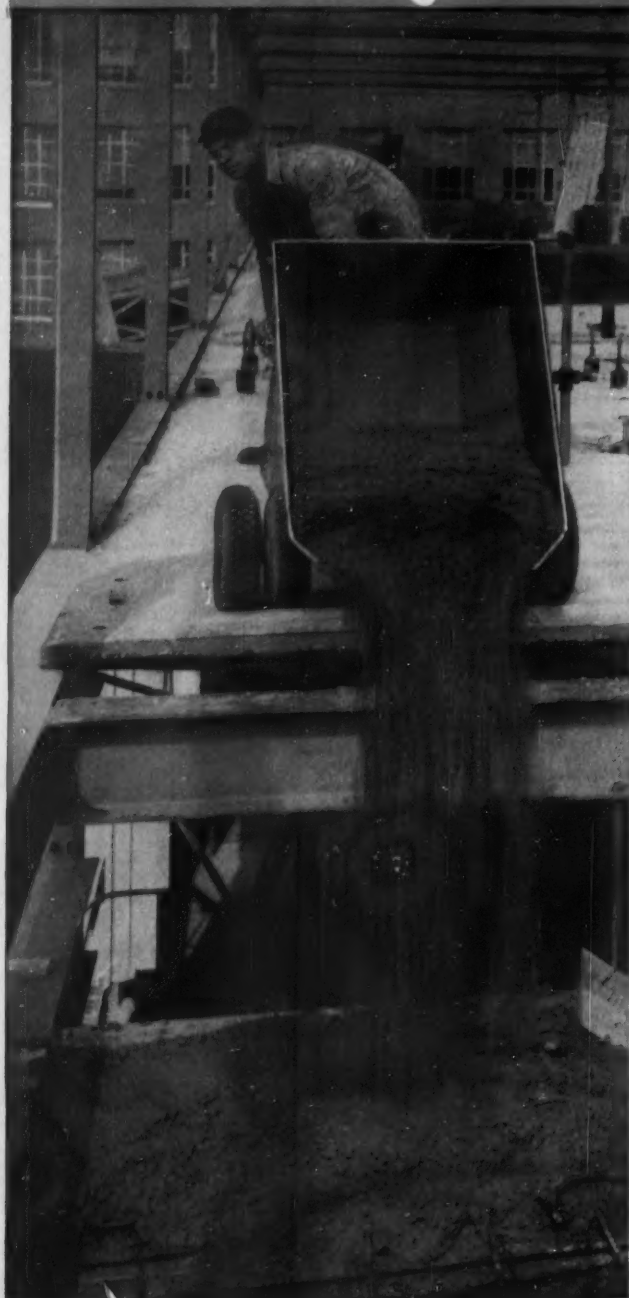
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DOES THE WORK OF

3 TO 4



Hauling 1500 pounds or 10 cu. ft. (struck) of bulk materials each trip, Kwik-Mix Moto-Bug easily does the work of 3 to 4 hard-to-get manual laborers. It travels twice as fast and hauls three times as much as a man with an ordinary wheelbarrow. On many jobs, owners report Moto-Bug pays for itself in less than 30 days, from savings in labor alone. It hauls concrete, plaster, brick, tile — anything you can shovel, pile or stack into the hopper body.

Compact, light, Moto-Bug rides to upper stories in regular construction elevators. Or it climbs 20% ramps to the top, fully loaded. 75% of loaded weight on front drive-tires gives plenty of grade-climbing traction. Short 61-inch turning radius, 33-inch width, and hinged riding step, make it easy to clear crowded work areas. Hopper body has instant gravity dump with snub-line control.

No push, no pull — Full power forward and reverse gives fast backing and spotting. Reverse is instantaneous. There's 3.6-to-1 gear ratio on big steering wheel for effortless maneuvering. Dual steering wheels, and optional duals on the drive end, provide plenty of rubber-tired traction, flotation and handling ease on or off pavement.

3-tool usefulness — Interchangeable ¾-ton capacity platform and ½-ton (5-foot) fork lift extend Moto-Bug's labor-saving economies to all kinds of material handling. Check for yourself. See Kwik-Mix distributor or write us for demonstration.

SEND FOR
MOTO-BUG
JOB REPORTS
ON

to: **KWIK-MIX COMPANY**

MILWAUKEE, Wis.

(Kochling Subsidiary)

NAME _____

COMPANY _____

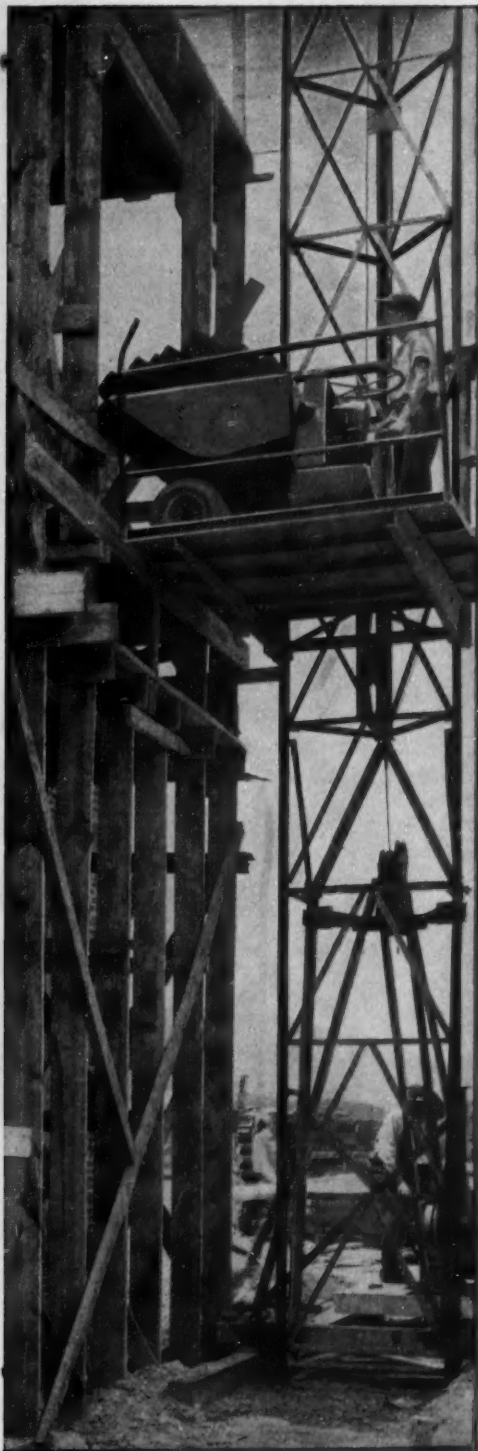
STREET _____

CITY, STATE _____

CEN 935

Also CONCRETE • BITUMINOUS • PLASTER-MORTAR MIXING





↑ 2 MOTO-BUGS, riding hoist elevator, distributed all blocks, bricks, mortar and concrete on Rocky Point, Va. school building (above). "Haven't spent a cent on them in 6 months", says the job foreman. "They're tough buggies — and they have saved us a lot of money and time."

Johnson $\frac{3}{8}$ to 3-yard Clamshell Buckets

Smooth inside and out, Johnson all-welded clamshells dig and dump with less resistance . . . give fast clean discharge. They're quick-filling, easy-closing, because big needle bearing-mounted sheaves reduce friction loss, deliver full digging power to cutting edge. Hard manganese edge, welded to heavy lips, toughens with use. 3 types, 10 sizes: $\frac{3}{8}$ to 3 yds. Also check Johnson line of concrete plants, bins, batchers, hoppers, silos.

C. S. JOHNSON • Champaign, Ill.
(Koehring Subsidiary)



215 Trenchliner® digs 18 feet per min.

With 30 digging feeds, this cross-country 215 Trenchliner digs 6 in. to 18 feet per min., 13 to 31 in. wide, up to 6 ft. deep. Square or round-bottom buckets have "easy-in, easy-out" Tap-In teeth. Standard tractor-type crawlers have 18-in. treads, lug-type shoes. Other Parsons Trenchliners: wheel-type 202 for drainage and utility work; 3 ladder-types, full crawler mounted; and the mobile, utility size rubber-tired Trenchmobile®.

PARSONS • Newton, Iowa
(Koehring Subsidiary)



Koehring $\frac{1}{2}$ -Yd. 205 has 10 or 15-ton lift

On clamshell, dragline, or lift crane operation, you gain an important advantage in extra load capacity with Koehring heavy-duty 205. On crawler mounting, it has 10-ton lift capacity, and boom lengths of 30 to 50 feet. As a rubber-tired truck crane, it safely lifts up to 15 tons. Maximum boom length is 55 ft. Quickly converts to $\frac{1}{2}$ -yard shovel or hoe. Three other Koehring sizes up to 2½ yards . . . crane lift capacities up to 79½ tons.

KOEHRING Company
Milwaukee 16, Wisconsin

264





AFTER ELECTRO-OSMOSIS TREATMENT, once-soft clay behind excavation is taken down to grade. Unfilled part of shells for piles, placed in holes drilled through berm, come out with spoil.

with a special fine-mesh screen and other internal alterations that permitted them to be driven rather than jettied. Anodes and cathodes were wired to three Griffin 70-kw dc generator sets driven by GM diesels. In addition, the cathodes were coupled to pipe headers connected to a 60-cfm Griffin wellpoint pump running continuously and developing 27 in. of vacuum. By removing the water collected, this pumping reduced the voltage and also the time required for bank stabilization.

While the electro-osmotic system was being installed and operated, bearing piles to support Units 5 and 6 were driven in the area already excavated to grade. On them, a 7-ft concrete base slab was poured. The pile driver then was moved on to the remaining berm at the south end to drive the rest of the piles from El 325. From this level the soil was drilled to El 306, and cast-in-place concrete bearing piles were driven and poured in the holes between El 306 and 292.

Then excavation of the counterbalancing berm was started. To keep as much weight as possible on the excavation side of the sheeting, the foundation area was dug out in six sections. Each section, or finger, was about 18 ft wide and extended through the berm to the main base-slab section previously poured. As soon as one finger was excavated and its 7-ft thick slab concreted, the next one was begun. This procedure was repeated until all six fingers (the entire width of base slab) had been completed.

Removal of the 19-ft high berm resulted in slight movement of the



STABILIZED BANK behind steel sheetpiling has had its soil's shear and compressive strength greatly increased by electric process that reduced water content from 26% to almost 19%. Berm is excavated and 7-ft foundation slab is poured in 18-ft wide sections.

base of the line of sheetpiling, with resultant tilting inward at the top. Actually, the exposed sheeting could be moved at will by hand. The top 8 to 10 ft had no soil against it on the slope side because when the sheeting tilted forward the bank did not follow. With widths of from 18 to 25 ft of sheetpiling being exposed at one time for the full 19-ft depth, with no bracing or tie-backs—and with no movement of the once treacherous

bank—it was apparent that the electric curtain had done its job.

Tests made throughout the operation of the electro-osmotic system showed an increase in the soil's shear resistance from 21 ft-lb to more than 100, as measured by a Swedish vane. Unconfined compression tests showed the average original strength of 0.19 tons per sq ft raised to 1.87 tons, or nearly a tenfold increase. These resulted

(Continued on page 82)



Wire Rope at Work—This is part of a multimillion-dollar construction job at Norco, Louisiana, not far from New Orleans. When completed for Shell Oil Company, it will be one of the world's most modern refineries.

Wire rope is one of the hardest-working components of the big steel-erection derricks. Because of the tonnages involved, the units are rigged with large-diameter rope, and there is almost three miles of 1½-in. Bethlehem Purple Strand on the job. In addition, several thousand feet of 2-in. Purple Strand is employed as guy lines. Here, as in every type of industry where heavy loads are lifted or hauled, the Bethlehem rope is more than equal to the tasks imposed upon it.

Bethlehem Steel Company, Bethlehem, Pa. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

Mill depots and distributors from coast to coast stock Bethlehem rope for the following industries and numerous others:
CONSTRUCTION • MINING • PETROLEUM • EXCAVATING • QUARRYING • LOGGING • MANUFACTURING



Le Roi-CLEVELAND T-286 Self-propelled Dual Drill Rig — consists of two patented Le Roi-CLEVELAND air feeds and drills with air-motor booms mounted on a mobile 25-hp tractor. You can drive the T-286 anywhere and tow your Air-master compressor as well. You get quicker setups, faster drilling, better fragmentation, and lower costs.



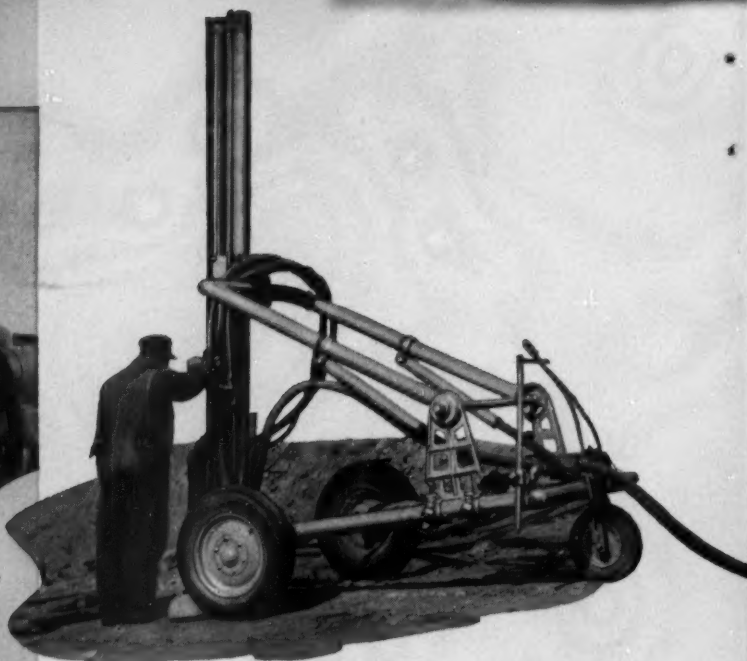
Le Roi-CLEVELAND Clay Digger — at work on a sewer job. Well-balanced for easy handling, these spaders pack plenty of wallop for the stiffest clay. Operators like them, because they can do more work with less effort. A one-piece, bonded, rubber buffer with split steel collars keeps out dirt and grit — makes steel changing faster.



Le Roi-CLEVELAND Paving Breakers — are packed with power to make quick work of breaking up the hardest concrete. Sizes range from 18 to 80 lbs. Protective cushion in front end assures long life. Exclusive valving provides an easy-holding action that operators like. All these features help you reduce your costs.



Le Roi-CLEVELAND Back-fill Tamper — weighs only 34 lbs. Thanks to its smooth-holding qualities it can be "walked" over the fill easily. Operators can do more tamping. The major parts are made from durable drop-forgings and a built-in oil reservoir keeps wear to a minimum. Just another example of how Le Roi gives you more for your money.



**Your air-power
operations**

***Cost
Less***

**LE ROI GIVES YOU MORE
FOR YOUR MONEY!**

***More air power!
More footage!
More profits!***

This Le Roi-CLEVELAND DR-30 wagon drill for deep-hole work is powered by a Le Roi 600-cfm Airmaster mounted on skids. Two- and four-wheel mountings are also available in most sizes. Capacities: 85 cfm, 105 cfm, 125 cfm, 185 cfm, 210 cfm, 250 cfm, 365 cfm, 600 cfm; gas and diesel.



...with Le Roi Airmaster Compressors and Le Roi-CLEVELAND Air Tools on the job

AIR POWER is so widely used, because it does so many things — because it saves money

And money-saving air power costs less, when you use Le Roi Airmaster Compressors. Here's why:

- Le Roi, with 8 sizes and 14 models, offers the widest range of portable-compressor sizes available. Now you can match your job requirements exactly, with an Airmaster Compressor that lets you do the most work for the least cost.
- Le Roi Airmasters are powered by a heavy-duty Le Roi engine designed especially for compressor service. Conservative engine ratings give you

ample power reserve — for lower fuel consumption, less maintenance, lower operating costs. Magneto ignition gives you quick, easy starting — saves time, lets you get going faster.

For still better results, still lower costs, use Le Roi-CLEVELAND air tools with your Airmasters. They will drill more rock, dig more clay, break more pavement, tamp more fill for you.

Use this team and you will find, as so many have, that Le Roi gives you more for your money — more air power, more footage, more profits. See your Le Roi distributor or write us for further information.

Compressors
Rock Drills
Tractair
Engines



LE ROI COMPANY

Milwaukee 14,
Wisconsin

A Subsidiary of Westinghouse Air Brake Co.

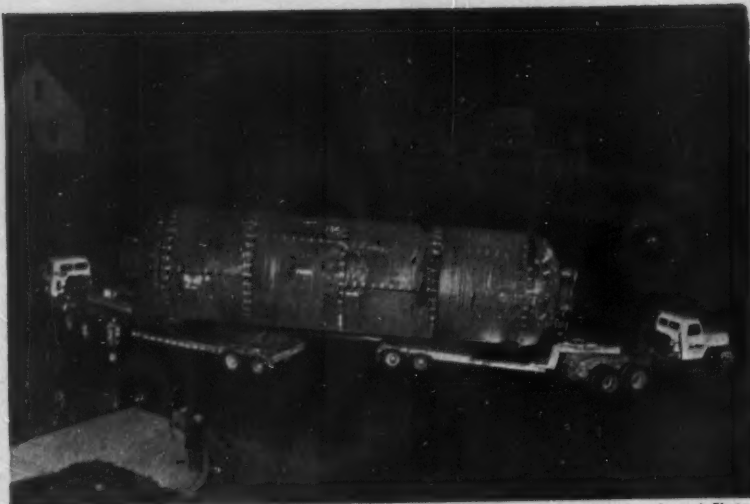
Plants: Milwaukee • Cleveland—Greenwich—Dunkirk, Ohio • Coldwater, Mich.

©-199

Nation-Wide Sales-Service Network

ALABAMA: Birmingham, Mobile — ARIZONA: Phoenix — ARKANSAS: Little Rock — CALIFORNIA: Bakersfield, Long Beach, Los Angeles, San Francisco — COLORADO: Denver, Grand Junction — CONNECTICUT: Hartford — FLORIDA: Jacksonville, Miami, Tampa — GEORGIA: Augusta, Decatur — IDAHO: Boise, Idaho Falls, Twin Falls — ILLINOIS: Chicago — INDIANA: Indianapolis — IOWA: Cedar Rapids, Des Moines, Waterloo — KANSAS: Great Bend, Kansas City, Pratt, Wichita — KENTUCKY: Lexington, Louisville — LOUISIANA: New Orleans, Shreveport — MAINE: Augusta — MARYLAND: Baltimore, Hyattsville — MASSACHUSETTS: Hyde Park, Newton Highlands, Worcester — MICHIGAN: Detroit, Grand Rapids — MINNESOTA: Duluth, Minneapolis — MISSISSIPPI: Jackson — MISSOURI: Joplin, St. Louis — MONTANA: Billings, Great Falls, Kalispell, Missoula — NEBRASKA: Omaha — NEW HAMPSHIRE: Manchester — NEW JERSEY:

Canford, Kingston — NEW MEXICO: Albuquerque — NEW YORK: Albany, Binghamton, Buffalo, Long Island City, Newburgh, Rochester, Saugerties, Syracuse, Whitesboro, Woodside (L.I.) — NORTH CAROLINA: Charlotte — OHIO: Cincinnati, Cleveland, Columbus, Dayton, Toledo — OKLAHOMA: Oklahoma City, Tulsa — OREGON: Portland — PENNSYLVANIA: Bethlehem, Harrisburg, Philadelphia, Pittsburgh — RHODE ISLAND: Providence — SOUTH CAROLINA: Columbia — SOUTH DAKOTA: Rapid City, Sioux Falls — TENNESSEE: Chattanooga, Knoxville, Memphis, Nashville — TEXAS: Dallas, El Paso, Houston, Lubbock, San Antonio — UTAH: Salt Lake City — VIRGINIA: Richmond, Roanoke — WASHINGTON: Seattle, Spokane — WEST VIRGINIA: Clarksburg, South Charleston — WISCONSIN: Milwaukee — WYOMING: Casper.



Milwaukee Journal Photos

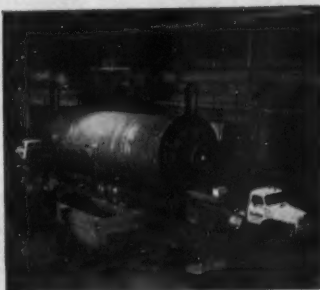
Tricky hauling problem solved by two low-beds!

Ingenious use of two LaCrosse low bed trailers—one traveling forward and one backing up—enabled SHEA MATSON CO., of Milwaukee to move this 66-ton steel vessel 15 miles in 8 hours, without mishap. Drum was lashed to flat beds with welded steel rods, plus a rugged king bolt arrangement, which let it "swivel" around tight corners, without upsetting the rear trailer.

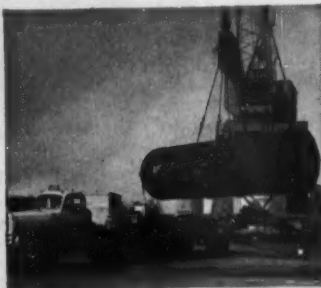
Due to the unprecedented size of the complete convoy (100' long x 17'2" high), 2½ days were needed to pre-check overhead clearances, turning radii, and load limits—along every foot of the 15-mile course. The move itself, requiring the utmost in driver skill and trailer dependability, was expedited by 5 motorcycle policemen, 2 Transport Co. linemen, and 3 trained supervisors.

Traffic Mgr. Matt Flach says

"Shea Matson Co. now owns over 40 LaCrosse low beds, and they haven't let us down yet." Why not investigate LaCrosse dependability and economy for your hauling operations.



AT 11:22 P.M. the two trailers—with drum slung between them—began inching their way out of A. O. Smith Corp. shops in Milwaukee's north side.



BY 7:20 A.M. next morning, the huge \$50,000 cargo was in safe custody of Jones Island dock cranes, ready for loading aboard ship.

LC-36R

LaCROSSE

430 Gould Street
LaCrosse, Wisconsin

Leaders in low boys
for over 22 years

TRAILER CORPORATION

CLAY STIFFENED . . .

Continued from page 78

primarily from a reduction of the clay's average water content from 25.8% to about 19.2%, brought about by electro-osmosis.

As a matter of fact, at the completion of the job, the system had made the soil so tight that it was impossible to extract any of the electrodes to salvage them: ¾-in. pulling cables broke, and heavier ones just tore the pipes apart.

Who Does It

General contractor for Electric Energy Inc.'s Joppa plant is the Bechtel Corp., San Francisco. A. J. Orselli, Bechtel vice-president is project manager, J. W. Hillman is construction manager, and R. W. Ayersman and S. Allen are general superintendents. Electric Energy is represented on the job by Turner White, vice-president. Wellpoint Dewatering Corp., New York City, stabilized the uncooperative bank. Dr. Leo Casagrande, consulting engineer, Harvard University, is WDC's consultant for electro-osmotic stabilization. On the Joppa job, the firm was represented by the author and by W. A. Gula, superintendent.

Stud Use Tips

Remington Arms Co., maker of the Remington stud driver, offers the following valuable hints on stud usage.

Strong arm methods can overtighten nuts on externally threaded studs. A 20-lb pull on a 6-in. wrench (120 in.-lb of torque) can exert a pull of one ton on a stud. When driving studs into tough, large-aggregate concrete not readily penetrated by the stud recommended, try one recommended for penetration of steel.

To prevent the cracking of asphalt tile when driving studs through it into concrete below, direct the heat from a blowtorch at the spot for a few seconds to soften the tile and possible cracking will be eliminated.

Perfectly flush fastenings are possible by using an internally threaded stud and machine screw combination. The stud is driven flush to the background surface so that the material to be fastened can be attached with a machine screw through a pre-drilled counter-bored hole.

PERFORMANCE:

**"If you think your rigs
can match our Drott's—
bring 'em around!"**

Says N. S. Purtee, Genoa Construction Co., Genoa, Ohio. "We bought our first Drott Skid-Shovel last year, and in nine months we dug out and loaded over 140,000 tons of road screenings and farmed 300 acres to boot. We worked it continuously — up to 16 hours a day — and were so amazed at its performance, that we just bought another Drott Skid-Shovel. When anyone mentions competitive equipment, we tell him to bring it around and try to keep up with our Drotts."

We know that contractors like Mr. Purtee are wise buyers. They examine the facts — compare features and choose the best value. Drott's many patented and exclusive features make the Skid-Shovel so rugged . . . so versatile . . . so productive, that owners keep them busy on profit making jobs all year 'round.

Examine the facts . . . and you'll be amazed at the many "extras" Drott gives you. For instance, pry-over-shoe Break-Out Action, exclusive with Drott, exerts a tremendous digging force (up to 13 tons) without straining the tractor. The Hydro-Spring, exclusive with Drott, reduces destructive hydraulic shocks to less than $\frac{1}{5}$ of their original force, thereby saving the loader, tractor and operator. Shoe transportation, with bucket roll back at ground



Shown here, left to right, are N. S. Purtee, Bassette Sheldon, and Robert Strohscher, of the Genoa Construction Co., Genoa, Ohio, who report that their Drott Skid-Shovels load out an average of 1,850 tons per machine in a 10 hour day. In a tough, driving business where only performance pays off, these experienced operators say — "No other loader can compare with our Drott."

level, exclusive with Drott, enables the Skid-Shovel to semi-skid its load on the ground and to travel over rough terrain without losing the load — this feature combines excellent balance with 360° visibility.

Drott Skid-Shovels are designed exclusively for International TD6, TD9, TD14A and TD18A crawler tractors. For a demonstration, contact your International Distributor today! For complete details, write for catalog 108.

DROTT MANUFACTURING CORPORATION

Milwaukee 8, Wisconsin



Here two DROTT SKID-SHOVELS are at the job of removing 100,000 tons of waste limestone from a U. S. Gypsum Co. plant. It is loaded into trucks and transported to an expressway site where it is used as a sub-base. Note the exclusive bucket roll back action at ground level — exerting a tremendous digging force more than the weight of the tractor.



DROTT SKID-SHOVELS also have higher lift and greater reach than any other comparable equipment. Equipped with patented Hydro-Spring, an exclusive shock absorber on Drott equipment, destructive shocks are reduced to less than $\frac{1}{5}$ of their original force, thereby saving strain on the tractor, loader and operator.



AMPLE STOCKED PARTS DEPARTMENT provides these off-the-shelf units for Gradall overhaul. Stanford Brovero, Phillip Trinpone and

Ralph Maucione, service manager, stand by ready to do the repair job. They endorse the unit exchange principle.

Off-the-Shelf Parts Service Cuts Gradall Overhaul Costs

TAKING A TIP from the automotive industry, a New Jersey firm solves equipment-downtime problems with a unit-exchange program backed up by single-stop service shop, netting sizable savings for both contractor and distributor. Here's an "inside look" at how this neatly integrated service set-up functions.

Construction equipment distributors have long recognized the importance, dollar-wise, of the equipment-downtime problem to their customers. Shop facilities, for the most part, have been geared along "customized" lines. As a result, extensive repairs have generally proved both expensive and time-consuming to equipment operators. In addition, such repairs tended to act as sales deterrents.

These factors prompted E. H.



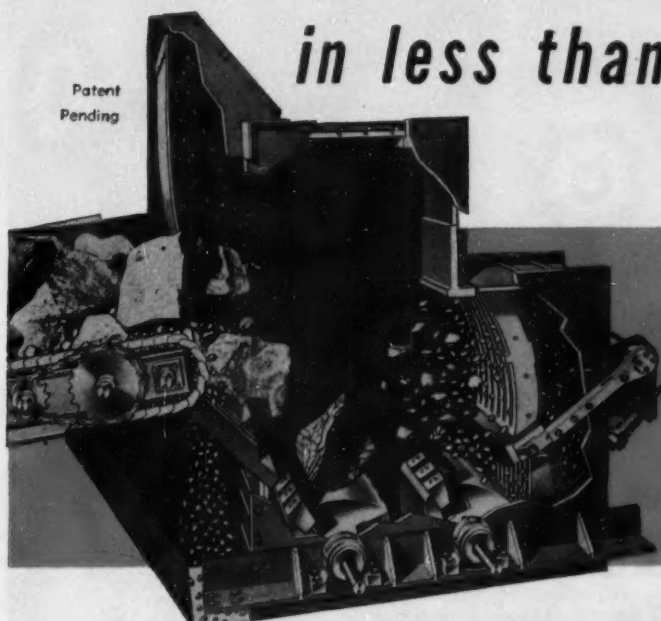
GREASE AND GRIME are removed from Gradall by steam pressure cleaning with special detergent solution. This is the first step in the overhaul process.

Kliebenstein and his service manager, Ralph Maucione, to study and appraise the whole question of service from the ground up. From their extensive examination has evolved a service system that simplifies and speeds essential maintenance on customers' Gradalls; also, it saves money, reduces downtime of equipment and enables them to put their machines back on the job faster and obtain greater use of them. At the same time, the system saves time and money for Kliebenstein.

This system embraces the unit exchange principle along with a shop set-up designed and equipped to provide single-stop service. A complete stock of replacement parts makes it possible to install quickly new or rebuilt parts taken from the shelf instead of rebuilding parts from a machine itself. To Gradall owners in Northern New Jersey, therefore, the system gives them off-the-shelf service.

What it means, in practice, is that a machine can be overhauled (Continued on page 87)

From feed to finish
in less than 3 seconds



**CONTROLLED
IMPACT
ACTION**

UNIVERSAL IMPACT MASTER GIVES YOU TOP CAPACITY PLUS
UNIFORM GRADATION CUBICAL AGGREGATE IN ONE FAST OPERATION

Controlled Feeding

Shovel loaded run-of-quarry rock is directed into the path of the rotor hammers to receive the smashing impact of a direct blow.

Controlled Breaking

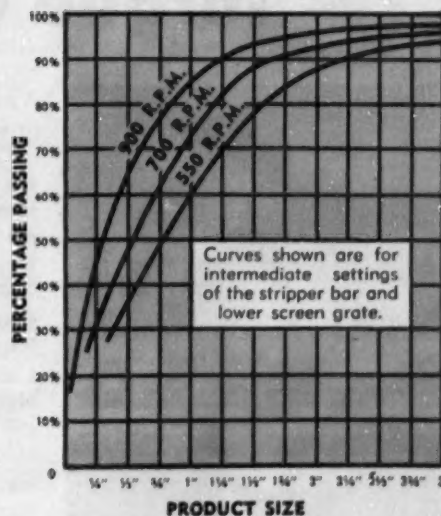
All of the breaking is accomplished by the impact of rotor hammers upon the rock resulting in a cubical product of highest quality. Both rotors rotate in the same direction *with the flow of material* promoting fast feeding and fast discharge for top capacity. Incoming rock is struck a solid blow by the first rotor and finish size is instantly discharged. Oversize particles are struck by the second rotor and finish size is again quickly discharged.

Control over Finished Product

Three simple mechanical adjustments provide complete control over finished product. Size is governed by rotor speed. Various positions of stripper bar and lower screen grate give a wide degree of control over gradation. In closed circuit setups recirculating loads can be kept to a minimum.

- **Ask for Literature.** Get the complete story on the UNIVERSAL IMPACT MASTER. Learn how its high speed production of highest quality uniform gradation cubical aggregate can earn greater profits for you. Models available for both portable and stationary setups with capacities to 750 tons per hour. Full details in Bulletin No. U534.

PERFORMANCE MODEL 3240



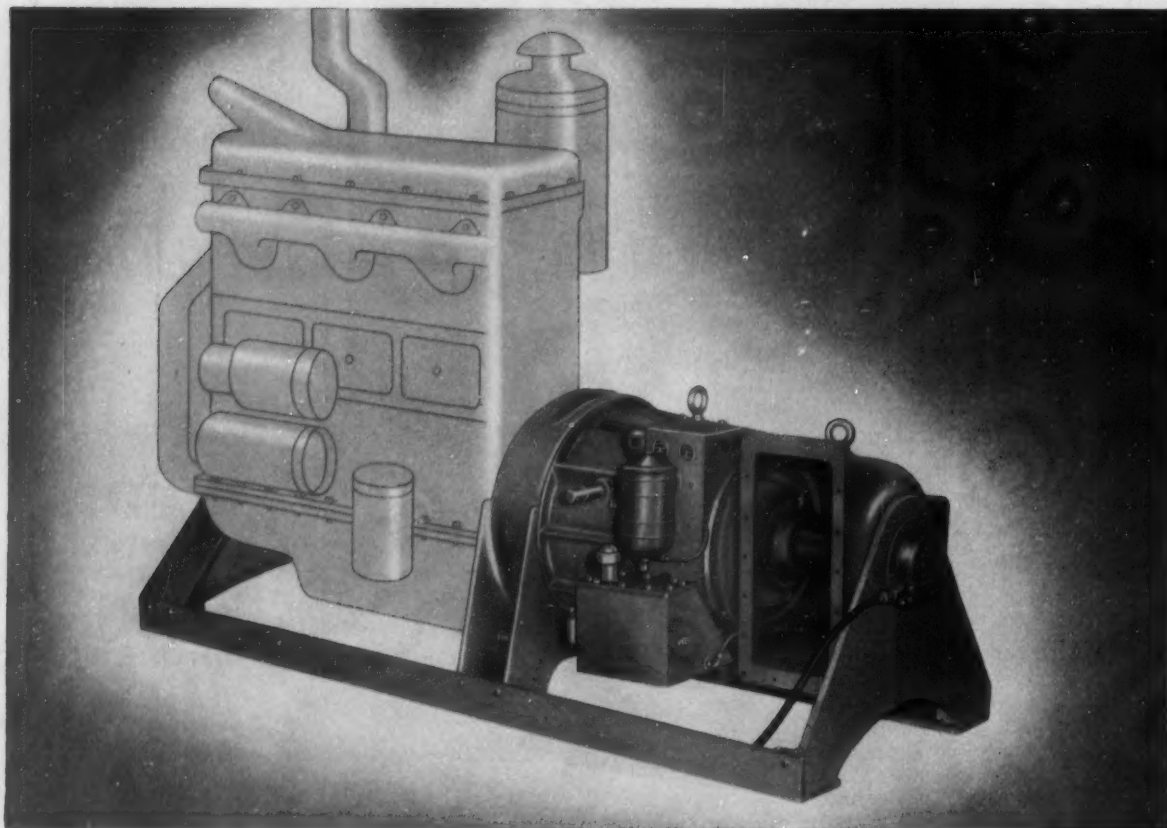
PETTIBONE

UNIVERSAL
In Cedar Rapids Since 1906

UNIVERSAL ENGINEERING CORPORATION

327 8th Street, Cedar Rapids, Iowa

A Subsidiary of Pettibone Mulliken Corporation, 4700 W. Division St. Chicago 51, Illinois



Up to $\frac{1}{3}$ more work with Torque Converter Drive



Twin Disc Three-Stage Torque Converters are in use throughout the construction industry, on the engines of leading manufacturers. Typical installations are shown here on a Cummins WIP-600 Diesel (above) and on a Waukesha Diesel (below).



A new power unit represents a major investment.

That's why it's so important that you get peak production and performance from it . . . with longest possible operating life . . . by equipping it with Torque Converter Drive.

With the Twin Disc Three-Stage Torque Converter design, here are a few of the advantages you will obtain: 1 Through *fluid* connection, with the *highest* torque multiplication available (up to 6:1 at stall), you'll *eliminate* overloading, lugging, or stalling. 2 Your engines will operate in *maximum* efficiency range at all times, with *more horsepower* put to work. 3 Power will *automatically* be matched to load demands. 4 Heavy loads will be picked up *smoothly*, without slipping the clutch. 5 Shock loads will be *absorbed*, saving en-

gines, clutches, and drive line components. 6 With an *infinite* variety of ratios available, you'll get *accurate, positive* control . . . permitting delicate "inching" or "holding" under power.

Today, throughout the construction industry . . . on power shovels, draglines, cranes, hoists, crawler tractors, heavy-duty trucks, industrial locomotives . . . owners of powered equipment as well as major equipment manufacturers are proving the quickest way to increase production volume—speed work cycles, provide easier operation, and assure longer equipment life—is to install Twin Disc Torque Converter Drive.

Talk to your engine dealer—or write *now* to Twin Disc Clutch Company, Hydraulic Division, Rockford, Ill.—and get the *complete* story.

Whatever your
engine preference,
your dealer can
equip it with a
Twin Disc
Torque Converter!

Whatever type gas or diesel power unit you're planning to order—from 40 to 650 hp—your engine dealer can equip it with a Twin Disc Three-Stage Torque Converter.

Three different Models of Twin Disc Industrial-Type Torque Converters are available. The Model IF is independent-mounted, with either narrow or wide chain housings on the input end. The Model F Torque Converter has a flange-type input, and bolts directly to the engine flywheel housing, with no clutch. The Model CF bolts directly to the engine flywheel housing, and provides a clutch between engine flywheel and converter pump wheel. Altogether, 20 different input, output combinations are offered, to match any engine hook-up.

Three Series, or sizes, are provided—the 10,000, 11,500, and 16,000—with seven capacities in each size through internal blading variations. As a result, your power unit can be equipped with a Twin Disc Three-Stage Torque Converter with the exact horsepower capacity required for greatest possible efficiency.



TWIN DISC CLUTCH COMPANY, Racine, Wisconsin
Hydraulic Division, Rockford, Illinois



AFTER THOROUGH CLEANING crew of mechanics tackles machine, removing the cylinders, power unit and pump and replacing them with new units. Rollers are next adjusted, surfaces and parts subject to friction are lubricated and the machine is ready to return to the job.

completely in a few days now instead of a few weeks, as formerly required. Repair work of smaller scope is correspondingly expedited with proportionate economies of time and money.

"Our service system and set-up are the direct result of the simplified design and unitized construction refinements embodied in the Gradall itself," Kliebenstein says. "The ease with which parts can be replaced in the machine—its adaptability to fast servicing in accordance with the motor-exchange principle—is what initially generated our exploration of the idea and its subsequent full-fledged adoption."

To provide this service, the company carries in stock a completely dismantled Gradall. Units or components making up this shelf stock consist of a power unit, a complete set of hydraulic cylinders, oil lines, hoses, rollers, and an assortment of minor components.

Suppose a contractor finds his Gradall machine requires repairs or needs rebuilding. Does he send it back to the factory?

No, he simply telephones the Kliebenstein Co., a service man goes over to the job site, gets the unit, and drives it to the shop.

Worn-out or damaged parts are stripped off the machine and replaced with new or rebuilt units in stock. It's as simple and quick as that! In practically no time at all, the Gradall is ready to return to the job. While this has been proceeding, of course, other sections of the machine are checked and adjusted so that it's completely ship-shape and ready to roll.

Let's take a quick trip through Kliebenstein's service shop to see how a Gradall is completely rebuilt.

First, all grime and muck are removed from the unit by a thorough cleaning, using the steam pressure-detergent method. Then a crew of mechanics tackle the machine, removing the cylinders, power unit and pump and replacing them with new units.

Next, the rollers are adjusted, surfaces and parts subject to friction are lubricated, and the machine rolls out the door—in 3 to 5 days, depending on the shop schedule, instead of two or three weeks heretofore required to rebuild the power unit, repack cylinders, and install them on the machine.

The speedy shop service system devised by Kliebenstein has a firm



BROS tip sheet

EQUIPMENT NEWS FROM A FAMOUS NAME IN ROAD MACHINERY

HERE'S HOW ROLL-O-PACTOR* CONTINUES TO REVOLUTIONIZE "BIG JOB" COMPACTION



Patented Bros design equalizes weight distribution over all four wheels on roughest terrain. "Superload" compaction! Roll-O-Pactor* is backed by the entire Bros factory and distributor service organization.

*Bros Roll-O-Pactor is patented in U.S.A., Canada and Mexico.

You spread earth in 18" lifts instead of 6" lifts, and use a 50-ton Bros Roll-O-Pactor* to compact to greater density with fewer passes. You break the slow compaction bottleneck, and rain doesn't keep you off the job as long as it does with other compaction equipment. Government and private job studies have proved beyond question the value of this Roll-O-Pactor* that others are trying to copy, even under possible patent infringements.

TWO NEW TAMPER FOOT DESIGNS NOW OFFERED BY BROS

Illustrated at right are the new Bros standard diamond-shaped tamping roller foot and the replaceable "Tamprite" foot. Both of these foot designs are now available on giant Bros "G" Series tamping rollers. Ft. psi range of the "G" series is 260 lbs. to 738 lbs.

Bros cleaner teeth are new, too. They have adjustable and reversible blades which mean that blades last longer and drums stay cleaner because blade contact can be readily adjusted.



Above left is the new Bros diamond-shaped foot with "relief" shank for easier withdrawal from soil. At right is the "Tamprite" foot with removable tip which saves time on replacement and readjustment, and lengthens foot life.

"Quickies" for your information

Since you don't want to be caught with "orphan" compaction equipment, remember that Bros is the world's largest manufacturer of pneumatic tire rollers.

Only Bros offers the widely tested and approved "Wobble-Wheel" design so popular on our smaller pneumatic tire rollers.

Smaller Bros rubber-tire rollers are 7, 9 and 13-ton models.

The medium size Bros Tamper model series offer a ft. psi range of 108 lbs. to 315 lbs. Smooth drum rollers, too.

Road Machinery Division, **WM. BROS BOILER & MFG. CO.**

1191 Tenth Avenue S. E. • Minneapolis 14, Minnesota

To get specifications and data on any of the Bros compaction products listed below, just check the items which interest you and send us this slip, along with your name, company or organization and address.

- ☐ Bros 35 and 50-ton Roll-O-Pactors*
- ☐ Special Airborne Roll-O-Pactors*
- ☐ Bros 7, 9 and 13-ton

- ☐ Pneumatic Tire Rollers
- ☐ Giant weight Bros "G" Series Tamping Rollers

- ☐ Medium weight Bros Series "M" Tamping Rollers
- ☐ Bros smooth drum rollers

PARTS OFF-THE-SHELF . . . Continued



DURING SLACK PERIODS workmen rebuild cylinders, replace worn piston rings, chevron packing and O-rings. These parts are then ready for reuse.

exchange basis set up with established prices. There's no problem of mounting labor costs.

After a Gradall has been overhauled and parts replaced, the units taken from the machine are rebuilt in the shop during slack periods or at workmen's convenience. Thus, "this system makes it possible to give owners on-the-spot service quickly — without losing time — and gives us the opportunity to rebuild parts and replace our replacement requirements stock when the shop isn't rushed. Consequently, we can maintain stock at the instant-availability level practically all the time," according to Maucione.

Many Parts

Kliebenstein's service facilities by no means stop with this exchange plan. They also encompass a large stock of parts (some 500 different Gradall items and 3,300 others), a fleet of three trucks and four cars for making service and trouble calls, and teletype communication with Warner & Swasey's home office in Cleveland, Ohio. In case of emergency, an order placed by teletype is shipped from Cleveland the same day.

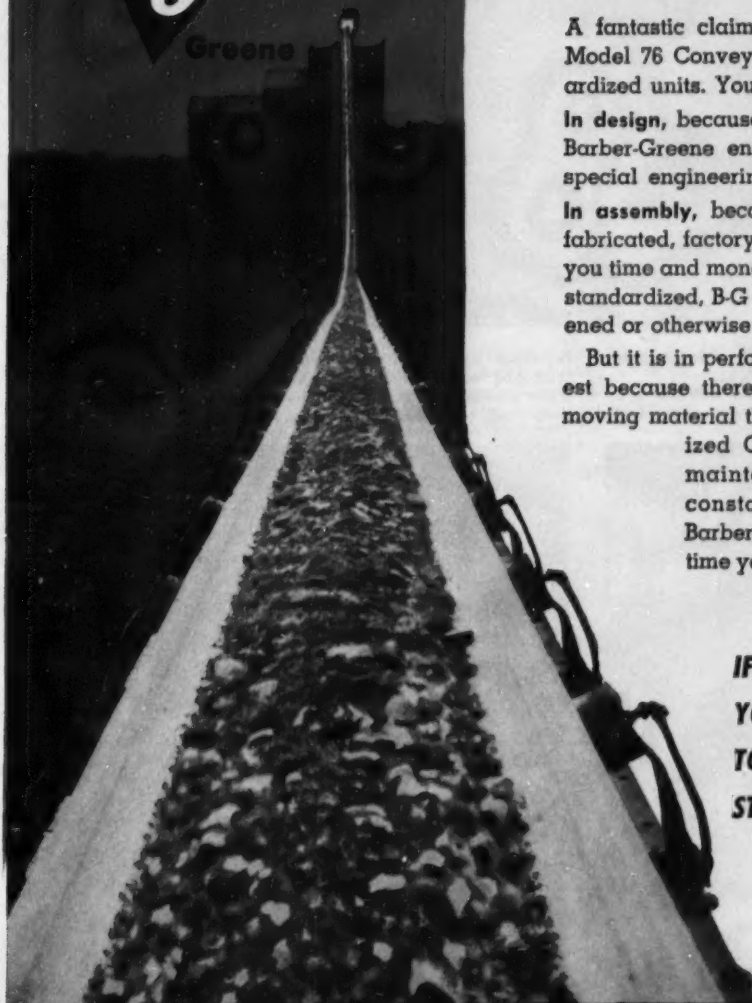
To round out his service program, Kliebenstein also maintains a staff of field servicemen to render service directly on a contractor's job site should trouble requiring immediate attention develop.

THIS BARBER-GREENE CONVEYOR BEGAN SAVING MONEY BEFORE IT WENT TO WORK

Barber

B
G

Greene



A fantastic claim? Not at all. Every Barber-Greene Model 76 Conveyor consists of pre-engineered, standardized units. You save in these important ways:

In design, because all this has already been done by Barber-Greene engineers—you don't need expensive, special engineering.

In assembly, because each component is accurately fabricated, factory aligned and clearly marked to save you time and money in erection. And, being completely standardized, B-G Conveyors can be lengthened, shortened or otherwise altered to meet new conditions.

But it is in performance that your savings are greatest because there is no more economical method of moving material than with a Barber-Greene Standardized Conveyor. Power costs are low—maintenance is minimum—production is constant. Why not take advantage of Barber-Greene's broad experience the next time you have a material handling problem.

**IF YOU MOVE MATERIALS IN
YOUR BUSINESS, IT WILL PAY YOU
TO INVESTIGATE BARBER-GREENE
STANDARDIZED CONVEYORS.**

WRITE FOR CATALOG

A catalog, completely describing Barber-Greene Pre-engineered, Standardized Conveyors, will be sent on request.

Barber-Greene

Aurora, Illinois, U. S. A.



(Advertisement)

Pictures of the month . . . by LeTourneau-Westinghouse . . .



Goodbye, dangerous curve — To eliminate several sharp curves along Ohio Route 3 near Loudonville, C. F. Replagle moved 40,000 yds of sandstone and dirt with his 3 C Tournapulls and 2 Carryall-Scrapers. On 1000 ft cycles, each 14-yd

Tournapull delivered 10 loads per 50-min hour. Total output per Tournapull was 2.7 times that of each crawler-drawn 15-yd pan. While crawlers and pans had to be trucked to job, "C's" drove in under their own power . . . averaged 20 mph for 90-mile trip.



Building NY thruway — Working on the southern end of the New York Thruway, this Tournatractor dozes sand for approaches to the Hudson River Bridge connecting Nyack and Tarrytown. Electric-control down-pressure helps blade make smooth cut in rocky root-filled material. Unit is owned by Rusciani & Son, N.Y. City.



2 units, 3,000 yds a day — J. Tomei & Sons Construction Company, Van Nuys, Calif, is moving 400,000 yds of sand and common earth for the Hollywood Freeway with 2 C Tournapulls. Each "C" averages 1500 pay yds per 10-hour day on hauls of 400 to 1300 ft. This includes spread around overpass structures on grades of 30% favorable to 20% adverse.



Better roads for Canada — Rebuilding 23 miles of Hwy 11 between Sylvan Lake and Condor, Assiniboia Constr Co, Calgary, Alberta, used 3 C Tournapulls to speed 2000 to 9000 ft one-way hauls. Despite traffic delays on typical 4100 ft haul, each "C" delivered 7 loads (84 pay yds) of sandy clay per 50-min hour.

... with performance reports from around the world



More cement for Turkey — Stripping a limestone quarry, this D Tournapull self-loaded abrasive, sun-baked clay overburden. Material, hauled 3200 ft down a steep hill, was used as fill for building site and roads. Complete 6400' cycles took 7 min. "D's" simple electric controls allowed an inexperienced Turkish worker to operate machine efficiently after a few hours' training.



Fast, rubber-tired pusher — Because of quick spotting ability, 8 mph reverse speeds, and instant speed selection, Schweitzer Constr Company's Tournatractor-pusher easily keeps 2 C Tournapulls "humping" on short cycles. With "C's" on long hauls, 186 hp tractor uses waiting time to clean cut, grade haul road, fill sink-holes. Rigs land-level year around near Lake Arthur, N.M.



Peels wet kaolin — Stockpiled kaolin comes up in sheets when dozed to mill near Macon, Georgia, by Edgar Brothers' Tournatractor. Rig has plenty of traction to move 2½ yd loads, despite slippery footing. "It really does the work," says Superintendent James Langford. "It has plenty of power." Note excellent condition of tires after more than 6000 hours of use.



Maneuverability pays off — A copper mine in Arizona reports their one 50-ton and two 40-ton Tournapull Rear-Dumps haul 27½ to 35-yd loads of rock and common earth up continuous 12% grades from pit to dump . . . average a 1.2 mile cycle every 12½ minutes. Fingertip electric controls, 4-wheel multi-

disc air brakes and 90° power steer make for safe travel on this difficult route. Operator R. G. Galloway comments, "I like the fingertip controls a lot better than the shift lever type. It's easier to steer getting out of tight places." For more information on tools shown on these pages, write LeTourneau-Westinghouse Company, Peoria, Ill.

Tournapull—Trademark Reg. U.S. Pat. Off. Tournatractor—Trademark Pic-646-G

Tuffy Draglines



Reduce Rope Costs — Sometimes
as much as **40%**



Consistently Longer Service! That's the story we hear from people who use Tuffy Drags! Whether you keep records of dragline yardage, number of days in service or total cost per yard, you'll find Tuffy Dragline will often beat past records by as much as 40%! Like hundreds of others, you'll rate Tuffy tops for yardage . . . service . . . economy!

Tuffy Dragline Is Specially Constructed to give you a flexible rope that hugs the drum when casting! What's more, Tuffy Dragline is made to provide maximum abrasive resistance for longest possible service!

Make The Tuffy Test!

- 1—Install Tuffy Dragline
- 2—Keep complete service records
- 3—Compare with Rope you are now using.

By Test you will find that Tuffy moves more material at a lower cost to you.



Tuffy Scraper Rope

Balanced flexibility provided to withstand sharp bends over small drums and sheaves. Stiff enough to resist looping and kinking when slack.



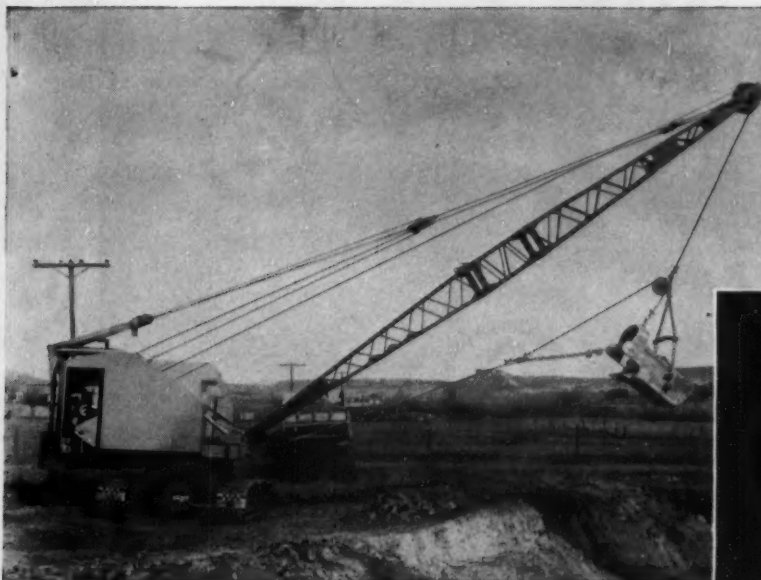
Tuffy Slings

9-part machine-braided wire fabric! Will not materially damage fabric when kinked or knotted! Favorite with those that demand safety and lower cost!



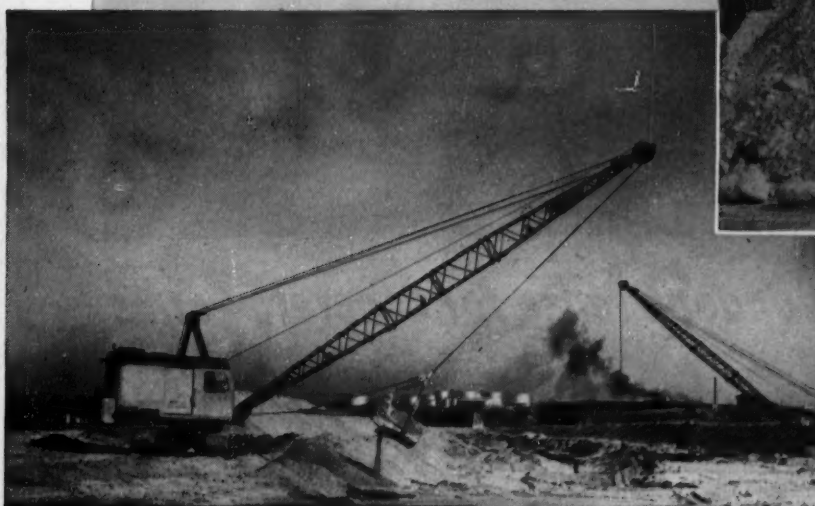
Tuffy Dozer Rope

Combined with proper cut-off procedure Tuffy Dozer Rope will greatly increase your service life—cuts downtime. Available in 150' lengths— $\frac{1}{2}$ " and $\frac{9}{16}$ ".



Aggregate material is where you find it. Dragging it up over the side of a pit exposes the dragline rope to plenty of abrasive wear. One of the features of TUFFY DRAGLINE is an outer construction which resists abrasive action to the utmost.

Here an accommodating glacial stream piled sand and gravel high above ground—so high, in fact, a dragline is needed to keep the big dipper from undercutting and bringing slides down upon itself. On locations like this, the flexibility of Tuffy Dragline makes for ease in casting the bucket when loading and unloading.



On dam sites, the flexibility, abrasive resistance and high tensile strength of TUFFY DRAGLINE makes it capable of handling more yardage than rope constructions not designed for this special purpose.



**Tuffy
Hoist
Line**

Designed to give you the utmost in service! Tuffy Hoist Line is tailor-made for use on OVERHEAD, STIFF LEG and MOBILE CRANES, CLAMHELLS and DERRICKS.



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The Wonder Grease for Concrete Forms

REGARDLESS of whether you use steel or wooden forms for concrete work — you can apply Globe Form Grease by spray, brush, or swab. This time-tested paste emulsion will reduce peeling and pitting to a minimum when forms are removed, and practically eliminate patching.

Due to its special adhering qualities, Globe Form Grease requires only a thin coating for utmost effectiveness. In fact, one gallon adequately covers approximately 200 square feet! And in addition — Globe Form is stainless, leaves a whiter smoother surface, and eliminates the need for painting.

Why not write for full particulars today? Once you use Globe Form Grease, you'll understand why engineers and contractors hail it as the "wonder grease" for concrete forms.

**OILS and
GREASES**
for every purpose
**DIESEL
STEAM
AUTOMOTIVE**

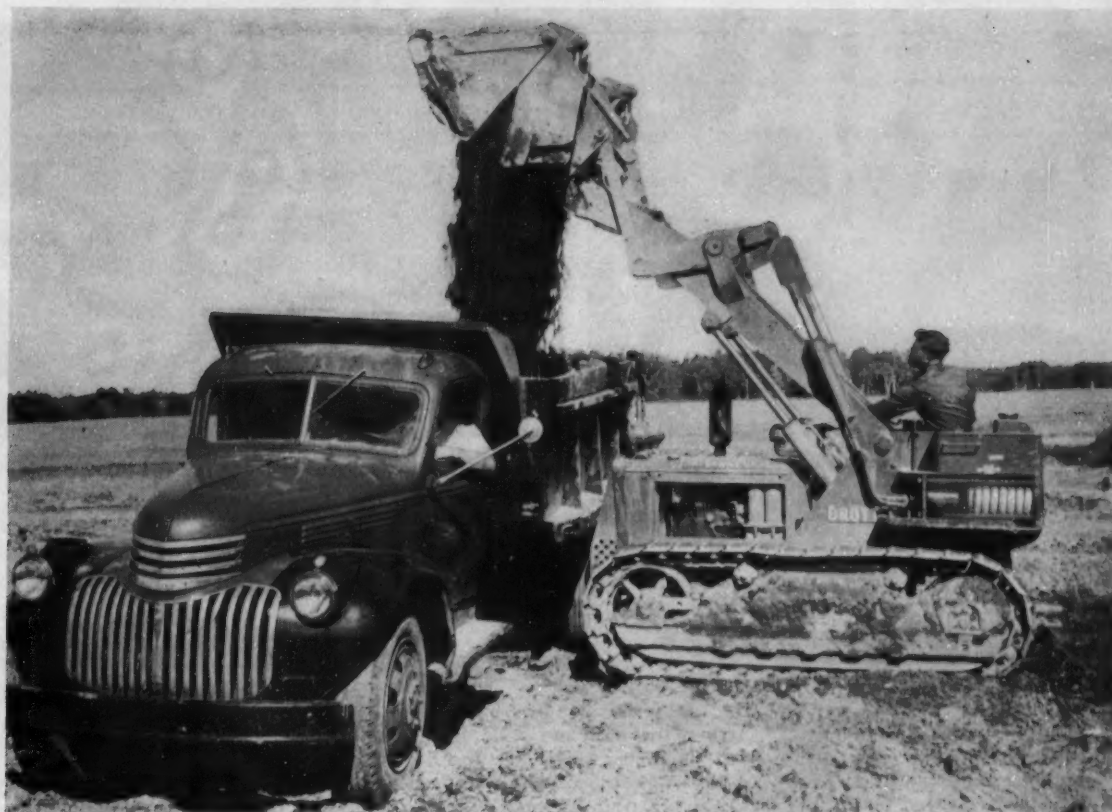
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High dumping from the bottom with a small tractor shows how . . .

Drott Four-In-One Multiplies Shovel Utility

A CM&E Equipment Development Report

By IRA F. ANGSTADT, Managing Editor



The Principle

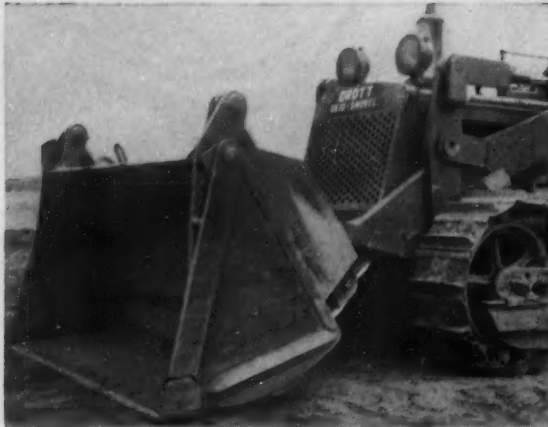
YOU CAN SKID a bigger load than you can carry; you can pry out a bigger chunk than you can lift straight up; you can doze more precisely by tilting for depth of cut; and you can load into a higher haul unit or bin by opening the bottom of the bucket.

There, in one breath, are the big features of the Drott Four-in-One skid-shovel attachment—just coming on the market. This highly versatile unit, operated hydraulically, can be converted instantly from skid-shovel to bullclam to clamshell, or to bulldozer, by the flick of a small lever.

Drott Manufacturing Corp., Milwaukee, is producing the Four-in-One in two sizes ($\frac{3}{4}$ yd and $1\frac{1}{4}$ yd) exclusively for International TD-6

and TD-9 crawler tractors. It is a further imaginative development of the popular skid-shovel introduced to construction several years ago (CM&E June 1952, p. 152). The reasoning behind this unique design is that the average owner of a shovel-loader frequently needs a bit of bulldozing or close-controlled stripping or grading in his operations. It does not take long to change from bucket to dozer blade attachment, but it does mean that the dozer must be conveniently near and usually it is a two-man operation. So, instead of attaching a dozer blade for a few minutes' work, the operator tries to get by without.

Drott engineers maintain that the front-end loader should be a utility



SKID-SHOVEL in normal front-end loader excavating position. Clam is closed tight and depth of cut is regulated precisely by radius control through powerful lever action around skid shoes.



BULLCLAM IS READIED for action by setting hydraulic indicator for 2-in. cut, which opens bottom to 10 in. Material boils in, filling unit, then bucket is closed and "rolled back" for carrying.

tool of the highest order, that it should save wear on a tractor, should not unbalance a tractor under normal operating conditions and should not fatigue the operator unduly.

They have succeeded admirably in making the Four-in-One a utility tool. And it lets a smaller tractor do much more work—without adding to the wear of that tractor.

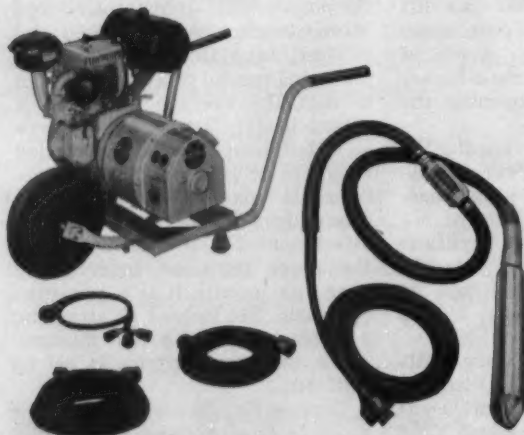
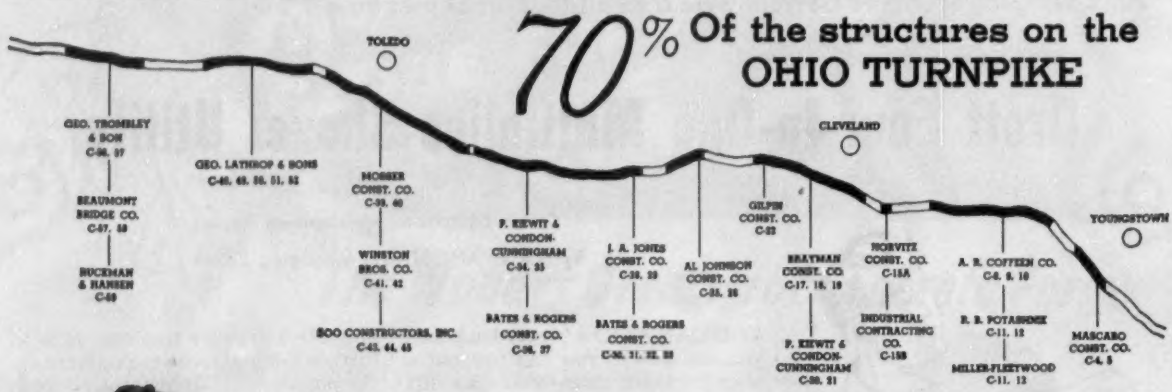
How It Works

Let's follow through the four basic functions of the new Drott attachment.

• **Bulldozing, grading, spreading**—Open the bullclam wide; the rear of the bucket becomes the dozer. Depth of cut is regulated by "radius control", the forward and back-

ward pitch of the blade, rather than by the lifting and lowering of push beams. Remember that the Four-in-One rides on its skid-shoes and that tilting of the blade is on these shoes, making depth control practically a precision operation with little skill required on the part of the operator. The unit can be lifted as desired, too.

(Continued on page 98)



Are being built with the aid of

Maginniss HI-LECTRIC CONCRETE VIBRATOR

On the structures for this major twin-lane super-highway, more MAGINNISS HI-LECTRIC VIBRATORS are in use than all other makes combined.

They are the choice of 19 different contractors; are saving labor and maintenance costs on 43 of the 62 sections. To learn the reason for their fast increasing popularity

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Maginniss POWER TOOL CO.
Mansfield, Ohio

Farbizo Coal Co., Dover, Ohio



**2 Years Old!...16,280 Hours!...No Repairs!
...Oil Consumption Unchanged!
With Cities Service DC-330 Oil**



ONE OF FARBIZO'S GRADALLS has done an outstanding job on a 38 core slag pit. Cities Service DC-300 oil keeps Farbizo's hard-working Gradall shovel in top shape.



IN THEIR TD 24 BULLDOZER TOO, Farbizo relies on heavy duty, high detergent Cities Service DC-300 oil. Heat-resistant, long-lasting and free-flowing DC-300 does the finest job possible.

**Twin G. M. C. Diesels In Marion Shovel
Give Outstanding Performance!**

Here's the story from the Farbizo Coal Co.:

"Following are the pertinent facts with reference to the Marion 111 M Shovel using DC-330 Oil since January, 1951:

"Developed ample power with TWIN G.M.C. Diesels operating at 1550 R.P.M. Operated 16,280 hours with no motor breakage or repairs. Mined 203,000 tons of #5 coal from 36" seam with an average over burden of 35 feet hard pan shale with streaks of iron ore bands.

"Oil consumption 1 pint per week, oil and filters changed weekly. Consumption is same as when shovel was new. Motors were recently inspected but no repairs or replacements needed. Unusual performance praised by G.M.C. and Marion Shovel representatives.

"Similar results using DC-300 Oil in two Gradall shovels and International TD 24 Bulldozer."

Let Cities Service lubricants protect the important investment you have in your machinery. Call your nearest Cities Service representative or write Cities Service Oil Co., Sixty Wall Tower, New York 5, New York.

CITIES SERVICE
QUALITY PETROLEUM PRODUCTS

Here are important facts
for the "man behind the gun"



This White 18" Dumpy level has
... more of the
features you want,
yet costs you less!

Before you buy, compare this White Dumpy level with a similar model of any other recognized make. From every standpoint — design detail . . . quality construction . . . work-speeding, life-lengthening features and cost — you'll quickly see why a White's the best buy you can make. It will make your work faster, easier, more accurate. Check this comparison chart:

FEATURES	D. White No. 7080	Instrument	
		A	B
Magnifying power of telescope	35X	30X	27X
Distance away you can read 1/100 ft. graduation	1200 ft.	1050 ft.	900 ft.
Diameter of objective lens	1.81 in.	1.485 in.	1.69 in.
Field of view (in minutes of arc)	64'	52'	60'
Coated optics	YES	YES	YES
Covered leveling screws	YES	YES	YES
Can you easily replace worn leveling screws in the field?	YES	NO	YES
Sensitivity of level vial (in seconds of arc per 2mm of graduation)	20"	20"	25"
Price — complete with carrying case, tripod and accessories — F.O.B. factory	\$295.00*	higher	higher

For complete details on the 18-in. Dumpy level and other equally fine engineering instruments, see your David White dealer, or write direct to DAVID WHITE CO., 34th W. Court Street, Milwaukee 12, Wisconsin.



We offer complete, expert repair service on all makes, all types of instruments.

*Price subject to change without notice.

DROTT FOUR-IN-ONE . . . Continued from page 96



BULLDOZING IS CONTROLLED closely by tipping Four-In-One forward or backward over skid shoes. It can be raised or lowered, too. Front half of bullclam is raised high when dozing.



CLAMSHELL ACTION is unique. For loading from stockpiles or in tight places, bullclam is opened wide, brought down over material and closed into the pile, filling as it goes.



LOADED CLAMSHELL ROLLS BACK on skid shoes into carry position. Entire clamshell loading operation is done hydraulically by operator. Tractor stands still.

• **Bulldozer shovel**—The clam becomes a depth gage. Opening it 10 in., permits the cutting edge to lower 2 in. As the bulldozer is pushed ahead, material boils into it and fills to a heaping load with a minimum of power and stress on the tractor—which follows on the smooth, even surface created. When loaded, the operator closes the clam, tips back the bucket on the skid-shoes and skids the load along. The bulldozer is an excellent tool for sanitary landfill operations. A special wearing plate across the front, and the design in general, bring an ironing, crushing and compacting action ahead of the clam as it moves ahead of the tractor on its shoes. It also is one of the best sod strippers imaginable. Sod rolls up inside the bulldozer like a carpet and can be unrolled and spread on site with little effort.

Radius Action

• **Skid-Shovel** — With the clam fully closed, straight-ahead filling of the skid-shovel is accomplished simply by tilting the whole bucket forward to excavate, as desired, until filled and rolling it back when heaped to retain the material. All this is done through the radius action provided by the hydraulic bucket control and the pivoting over the skid-shoes. Transporting is largely on the skid shoes, taking most of the stress off the tractor. The load is raised straight up by the lift cylinders and dumped into the truck, bin or stockpile by tilting the bucket forward or by opening the bottom and letting the material fall out. The skid-shovel is equally efficient when loading from stockpiles.

• **Clamshell** — Opening the bulldozer wide makes it possible to operate it as a clamshell for loading from stockpiles or picking up loose material in close quarters. The open clam is brought down into the material and closed by hydraulic power, filling as it closes. Transporting and dumping are done with skid-shovel techniques.

It's Easy

A novice masters the basic operations quickly, and experienced operators will think of many new uses for this handy tool. All movements but the opening and closing of the bulldozer are controlled by one four-direction control valve at the right hand of the tractor operator. Push the handle out, the Four-in-One rolls back; pull it in, the

STRONG · DURABLE
KINKPROOF ... for
Maximum Service
and Safety

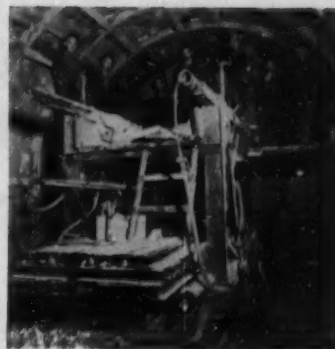
A GOODALL
"Standard of Quality"
PRODUCT



"ALLGOOD CORD"

Manifold and Caisson **AIR HOSE**

A super hose in every respect, built for two important fields of service . . . manifold lines to jumbos, wagon drills and drifters, where its extra strength and durability assure steady power to the drilling tools; and "life" lines to caissons, where its tough, kinkproof construction precludes the risk of failure in the air supply.



The tube, carcass and cover of "Allgood Cord" are combined to form a hose structure which will withstand high pressures constantly applied; continual dragging over rough surfaces; and blows inflicted by falling rock, tools and timbers. Made in 1½" to 4" sizes, in maximum lengths of 50 feet. Contact our nearest branch for details.



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MATERIAL BOILS to heap bucket when partially open bullclaw takes an easy, even cut resting on skid shoes. This feature makes good excavator-loader out of smaller tractor like this TD-6.



HEAPED SKID-SHOVEL on way to truck. Hydro-Spring at rear, left of operator, is connected to lifting side of bucket-carry cylinders, absorbs two-thirds of shock on tractor and operator.

unit rolls forward; push forward, it lowers; pull back it raises.

Two hydraulic cylinders give bucket control. The one to the left of the operator is marked for four different operations and the proper setting of the Four-in-One is obtained by pointing the integral indicator rod—a kind of "shovel selector"—to the proper position. Settings are made whether the

tractor is at rest or in motion.

The selector valve is a three-spool Hydreco unit. Two are used for shovel control and the third is a spare, made available for the owner who wants to add other hydraulic equipment to his Drott-equipped International. The pump is a Commercial Shearing and Stamping gear type. Fluid used is SAE 10 oil. Special steel alloys in

the skid shoes and wear plate of the Four-in-One make for long life. Replacements can be bolted on quickly in the field.

The Hydro-Spring

A Drott exclusive is the Hydro-Spring, which absorbs the rough shock loads encountered in front-
(Continued on page 105)

especially designed for your **"UTILITY TRENCHING"**

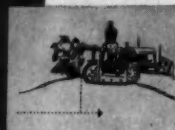
THE UNIVERSAL TRENCHER



Model "3A 48" Mounted on OLIVER Model "OC 3" Crawler Tractor
(14" 16" 18" WIDTH and to 48" DEPTH)

Send for our **FREE FOLDER** for your file . . . It outlines the many outstanding **FEATURES** and **SPECIFICATIONS** of the **UNIVERSAL TRENCHER**

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HOLDS LINE AND GRADE WITHOUT EFFORT




SWITCHES DIRT INSTANTLY TO EITHER SIDE



CROSS TRENCHES... SQUARE TRENCHES


NOW



DU PONT—producer of a whole
family of fibers—recommends
NYLON as the **BEST** tire cord

- **NYLON MEANS MORE MILEAGE**
- **MORE TIRES SUITABLE FOR RECAPPING**
- **MORE FREEDOM FROM THE ROAD DELAYS
THAT BOOST "HIDDEN" TIRE COSTS**

TURN PAGE to read how road experience
of leading truckers proves
**NYLON CORDS GIVE
LOWER COST PER MILE...**



TRUCKERS' ROAD TESTS PROVE...



"WE TESTED 56 nylon cord tires to see how far they'd go," says Frank Babbitt, Babbitt Brothers Transfer Company, Bloomer, Wis. "They averaged 174,000 miles without a single blowout or carcass failure—without recapping!"



"ROAD DELAYS from heat blowouts have been completely eliminated since we started using nylon cord tires," says Robert Schutt of John Schutt, Jr., Inc., Buffalo, N. Y. "Such delays in hauling cement used to cost \$300 to \$400."



"RECAPS were our problem," says Oscar Ganner, R. L. Surles Motor Freight Line, Houston, Texas. "Moisture rotted cords in our old tires: recaps blew before we got our money's worth. Recapped nylons give full tread wear."



R. E. WOOLEYHAN, PRES., WOOLEYHAN TRANSPORT CO., SAYS NYLON CORDS CUT

...NYLON CORD TRUCK

Du Pont and leading tire manufacturers worked together for ten years to perfect nylon cord tires. Now actual road experience proves nylon gives best all-around protection against tire failure—makes possible long-running recaps—guards against blowouts and road delays. Nylon gives you more mileage for your tire dollar . . . lowest cost per mile.

Nylon cords are so tough they practically end cord ruptures and protect against bruise breaks when tires hit holes and bumps. They effectively resist the hottest temperatures a tire

SEE THE LAST PAGE OF
FOR MORE N



ORDS CUT

TIRE COSTS 27.2¢. NYLON CORD TIRE (LEFT) RETREADED THIRD TIME AFTER 218,000 MILES. OUTWORE 3 ORDINARY TIRES (RIGHT) THAT AVERAGED 73,000 MILES EACH.

CK

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st tire
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a tire

TIRES GIVE MUCH LOWER COST PER MILE

will ever encounter in normal highway operations. Nylon cords are resilient—do not break under the twisting and flexing that takes place every time a tire turns. And damp rot of cords, which was once a major threat to tire life, is a thing of the past with nylon. Even if moisture seeps in through cuts to reach the cords, nylon resists deterioration.

Whether your fleet is large or small, it will pay you to make this test. Try a set of nylon cord tires under any road conditions. See how nylon can take grueling highway punishment.

Prove to yourself that nylon cords can safely support your heaviest load, give longer service, assure you far more recaps. Ask your dealer about a set of nylon cord truck tires today. (Du Pont makes nylon fibers, does not produce tires.)

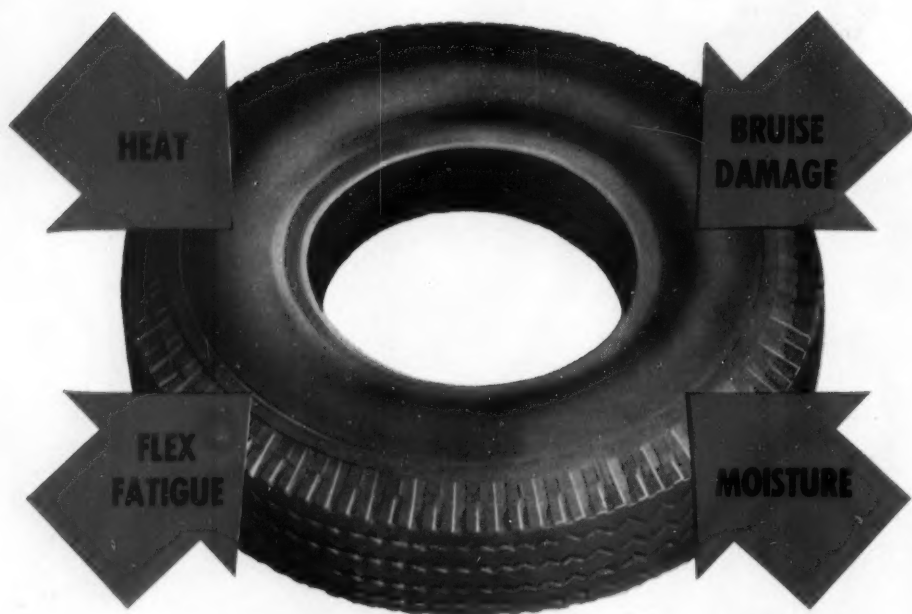


BETTER THINGS FOR BETTER LIVING
... THROUGH CHEMISTRY

GE OF THIS INSERT

RE NEWS ABOUT NYLON CORD IN TRUCK TIRES ...

NYLON gives the best protection against these causes of tire failure:



Free

Read how Nylon gives extra protection. Booklets on nylon tires—write for your copies. Textile Fibers Department, Room 11506-F-3, E. I. du Pont de Nemours & Co. (Inc.), Wilmington 98, Delaware.



NYLON—one of Du Pont's modern-living fibers



REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

end loading operations. It is a hydraulic cylinder enclosed in a coil spring and connected to the part of the hydraulic system supplying oil to the lifting side of the main lift cylinders.

Shock forces coming from shovel operations tend to push oil out of the lift cylinders. Oil, displaced under excess pressure, channels into the Hydro-Spring cylinder, extending it and compressing the heavy outer coil spring until the shock is dissipated—simultaneously cushioning both tractor and operator against damaging and fatiguing shock.

When the shock has been absorbed, spring and cylinder return

work the easy, natural way. For example, he will not tolerate an equipment design that might subject a tractor to extra stresses and wear. Out of such thinking grew the design for the Hydro-Spring, shovel balance on the tractor, skidding (he prefers to call it semi-skidding) of loads forward and in reverse, all arms and equipment inside the crawler tracks and the design that makes it possible for an operator to choose the most efficient excavating, loading and grading tool merely by moving two small

levers without even stopping the tractor.

Drott is a veteran logger from upper Wisconsin who designed a front-mounted log and pulpwood grapple for crawler tractors in the early '40s. It had a pry-action break-out fork to salvage timber frozen to the ground. He applied a simple lever action, transmitting break-out force into the ground through the skid shoes with a short, powerful radius action.

His radius control and skid-shoe
(Continued on page 108)



SOD STRIPPING begins by setting bullclam to cut 2 in. deep, opening bucket about 10 in. Operator's vision is unobstructed.



BLANKET OF SOD rolls neatly into bullclam in single piece as tractor moves forward. Opening clam wide deposits it undisturbed.

to normal position. By measurement, the Hydro-Spring shows more than two-thirds reduction of these natural operating shocks. It eliminates most of the hydraulic hose failures, too.

A Philosophy

E. A. Drott, founder, president and idea man of the company bearing his name, believes in doing

"THAT'S REALLY THE WAY TO HANDLE CONCRETE"

says L. G. (Bud) Waigand,
Project Manager, Peter
Kiewit Sons Co.



Two men
ran this
Noble
batch plant
with 285
Keeshing
mixer

How would you haul and place 16,000 yards of concrete on a big water reservoir job, with pours scattered all over . . . and with a tight schedule?

Peter Kiewit picked two 3-yard Dumpcretes, mounted on light, short-wheelbase Chevrolet trucks for their U. S. Bureau of Reclamation job near Salt Lake City.

"We liked the Dumpcretes because they're fast," says Mr. Waigand, "and because they place equally well into forms, buckets or collecting hoppers. They're rugged too, and cause little downtime."

For facts on 2, 3, and 4-yard Dumpcretes write today.

MAXON DUMPCRETE

Manufacturing Division
MAXON CONSTRUCTION CO., INC.
700 Talbot Bldg., Dayton 2, Ohio

Send the following

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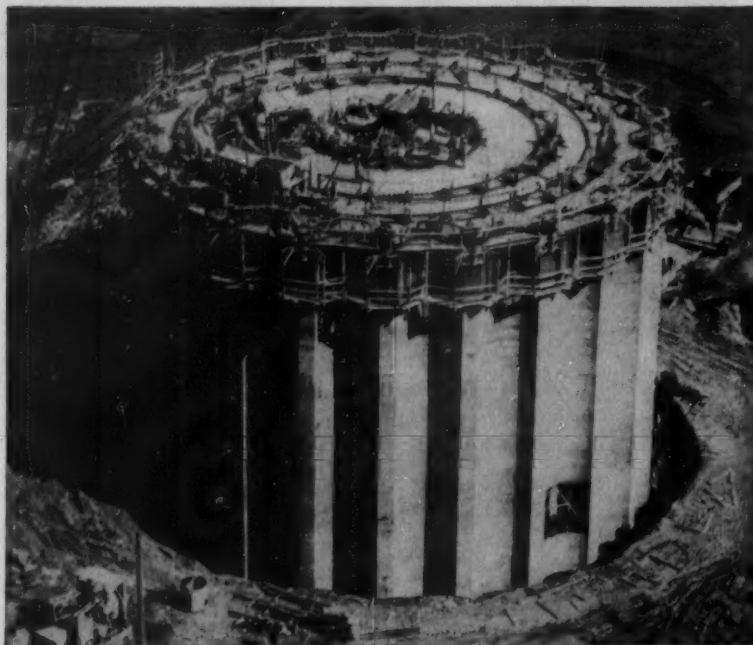
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Fastest from
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"CONCRETOR" HYDRAULIC JACKS

Tried
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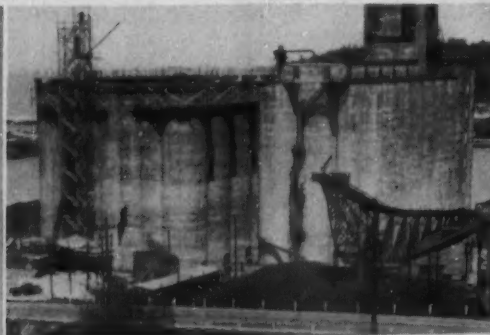
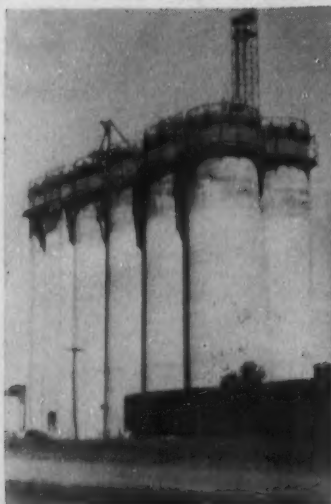
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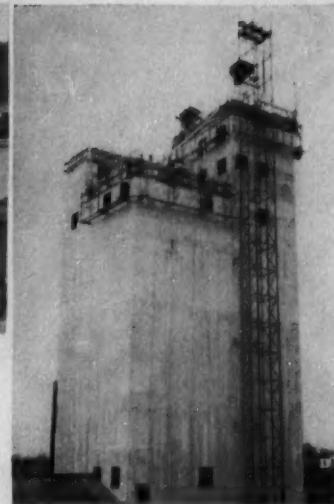
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Slipform Construction with Synchronized Jacking
Controlled Centrally or Individually
Slip it the Concretor Way—Hydraulically

Our service is complete—jacks—yokes—pumps—jack rods—oil pipe and connections—on the job engineers.
Write our engineering department for information and details of rental plan available.

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The Davis

Pit Bull



Patent Pending

Replaces... HIGH-INVENTORY EQUIPMENT

11 TO 1



Pit-Bull Loader



Pit-Bull Broom



Pit-Bull Back-Hoe

11 Attachments...to 1 Basic Unit



Trencher



Fork Lift



Dozer



Hammer



Swinging Crane



Loader



Post Auger



Cab Attachment



Rotary Mower



Model 100 Loader

Here is a low-cost single unit that fits Ford or Ferguson tractors with 11 attachments that replace high-cost industrial machines.

Any of the attachments can be fitted to the basic **Pit-Bull** unit in only a few minutes, and another job is underway with the same operator at the fingertip controls.

the **PIT-BULL**

- ★ Cuts Labor Cost
- ★ Cuts Idle Labor Time
- ★ Cuts Idle Equipment Time
- ★ Cuts Heavy Equipment Inventory
- ★ Cuts Heavy Equipment Transportation Cost
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- ★ Cuts Heavy Equipment Operational Cost

...Now, Look at Your Profit Margin

The basic **Pit-Bull** hydraulic power unit is attached to your Ford or Ferguson tractor by your dealer. This includes the installation of a synchromesh transmission with underdrive, providing four speeds in either direction and permitting you to change direction without shifting gears.

The driver's seat and steering controls are reversed, and **Pit-Bull** control levers installed so that the operator can manipulate the unit hour after hour with ease and comfort. This rear conversion enables the operator to maintain simultaneous control over the hydraulic operation and the tractor as well as to have a perfect view of the working area.

Attachments can be changed in a matter of minutes, and you buy only the attachments your particular job or operation requires. See your dealer.

The Davis Pit-Bull is manufactured by the makers of the Davis Model 100 Loader, America's quality front-end tractor loader.

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(Advertisement)

GASOLINE or DIESEL?

Hercules engineers will assist you in the proper selection of the most economical type of engine for your particular equipment.

Many of our customers have asked us, "Which type of engine would be best for me?" Perhaps this same question has entered your mind at one time or another.

Of course, there are many governing factors which should be considered in selecting the proper type of engine for a particular piece of equipment. First of all, how much horsepower is needed? Is there a special type of fuel which costs less locally . . . natural gas, L.P. Gas, kerosene or crude oil? How much money will be involved in the initial purchase? How much money can you expect to save by using a low-cost fuel? Will it be enough to offset the extra cost of a special type of engine? These and many other questions should be objectively answered before any engine is purchased.

We have no particular cause to champion and do not attempt to take sides or promote the use of one fuel over the other. As you know, we manufacture all types of internal combustion engines to operate on any fuel that is readily available. (Natural gas, L.P. Gas, kerosene, diesel fuel, gasoline, crude oil, etc.)

The basic Hercules gasoline engines are adapted by minor changes to operate on different spark-ignition fuels. The Hercules diesel engines are compression ignited — specifically designed for operation on diesel fuel.

We have, however, maintained several similarities between the Hercules spark-ignited and the Hercules diesel engines which we think are very important. First of all, gasoline and diesel engines of comparable piston displacement have similar mounting dimensions and operating charac-

teristics. Generally speaking, this makes it possible for equipment to be powered by either Hercules gasoline or diesel engines without creating any major installation problems. Thus, equipment manufacturers are able to supply customers with the proper type of engine to assure "top-notch" economies, according to the customers' operating conditions.

Another similarity between our gasoline and diesel engines, is that they both are of the 4-cycle design. The 4-cycle design is universally accepted and understood. This feature provides for less complicated engine servicing and in addition, service is readily available throughout the country.

What does all this mean to you? Maybe we can sum it up in our motto, "Engine Manufacturing Specialists Since 1915". Actually, we're custom engine builders with manufacturing facilities. Our engineering and sales policy is to design and sell engines to meet the exacting needs of our customers.

As a result, we have 70 basic models of gasoline and diesel engines which range from 3 to 500 H.P. They are available in many different designs . . . vertical and horizontal engines, special fuel handling equipment, various types of flywheels, etc. . . in fact, we probably have an engine that will fit your particular needs to a "T".

Whether it's Agricultural, Oil Field, Automotive, Construction, Industrial, Marine or any other engine application, our engineers will gladly assist you in the proper selection of power for your equipment. Give us the details, so that we understand your problem, and we'll provide the answers to your power problems.



HERCULES ENGINES

HERCULES MOTORS CORPORATION

111 Eleventh Street S.E. • Canton, Ohio

DROTT FOUR-IN-ONE . . .

Continued from page 105



SMOOTH, EVEN SURFACE remains as a result of regulating depth entirely through radius control, tilting around skid shoes.



THE SHOE. Skid shoe which carries bucket, controls depth of cut, multiplies breakout force and serves as pivot point.

principle were a natural advantage for a front-end shovel, and developments brought this into production — also the radius-controlled bulldozer. Another successful attachment that can be installed in a few minutes to replace the Four-in-One is a grubber blade. Its heavy teeth pry out rocks, trees, stumps and big roots with ease, even shaking out the dirt for easier decking and burning.

Drott officials insist that, whenever possible, loading operations should be straight forward, claiming that twisting and turning increases tractor wear by as much as 500% over straight-line work. They

say that loading should not be from the side of a hill or bank, where the tractor must be turned sideways each time to deposit a load into a truck.

Instead, loading should be off the top of the hill, taking off uniform layers as the tractor moves forward filling its lowered bucket and dumping into trucks straight ahead. Empty trucks could make the uphill climb easily, and loaded ones would travel downgrade. It all sounds mighty logical for many projects, and these fellows at Drott have the tool and the inspired know-how to sell their interesting earthmoving ideas. Watch them go places.

Specifications

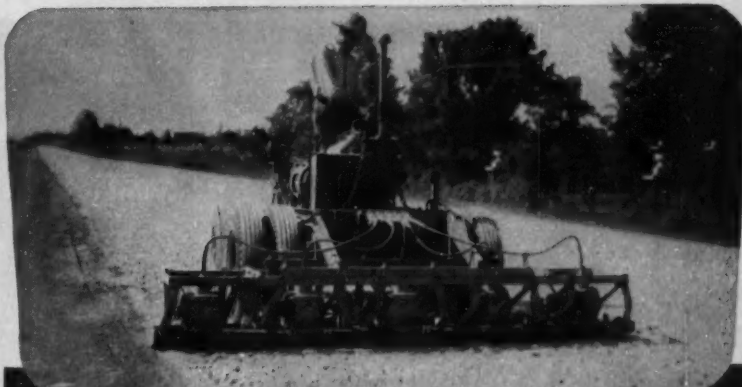
(For T and TD-6 IHC Crawler Tractors)

Over-all Height	40 in.
Over-all Width	68 in.
Depth of Bucket	22 in.
Maximum Bucket, Clam Shell and Bullclam Shovel Rollback at Ground Level	44 deg.
Clearance under Bucket when Dumped—Bottom Dump	9 ft. 7 in.
Clearance under Bucket when dumped—Forward Dump	7 ft. 6 in.
Maximum Forward Dump	46 deg.
Maximum Bottom Dump	118 deg.
Maximum Pitch from Radiator—Forward Dump	56 in.
Maximum Pitch from Radiator—Bottom Dump	60 in.
Lifting Capacity	3,000 lb.
Digging or Break-Out Force	8,500 lb.
Maximum Weight of Counterweight	500 lb.
Track Shoe Width	12 in.
Weight of Four-in-One Unit (includes Hydraulics)	1,286 lb.

Wellpoint Data

AN INTERESTING CATALOG, which really is almost a book of case histories in wellpoint dewatering of various types of construction projects, was sent to us by the Moretrench Corp., Rockaway, N.J. Included is a small amount of technical data and a dozen pages describing Moretrench wellpoints, pumps, parts and special devices.

But most of the book is devoted to an interesting and informative procession of big pictures of job sites being dewatered successfully—many times under unusually difficult conditions. A description of the method accompanies each one. Ask for a copy by writing directly to the company.



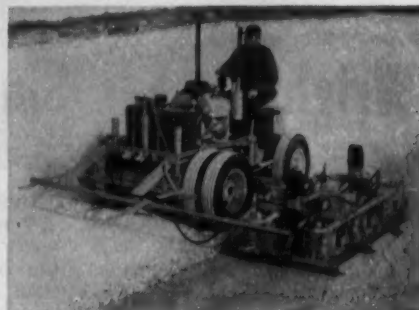
The JACKSON VIBRATORY COMPACTOR

FAST • EFFICIENT • VERSATILE

ON MACADAM CONSTRUCTION . . . only one pass or two usually required to compact 12" of rock to final density. And when sufficient fines are spread, one pass suffices to fill all voids. In GRAVEL SUB-BASES (blanket course) 7" thick, this machine has achieved 98% Standard Proctor in one pass. It is equally efficient in granular soil-cement paving or base course construction. Standard width is 13', 3". Working speeds: 0-60 F.P.M. Reverse travel speed: 5½ MPH.

COMPACTS WIDENING STRIPS IN ONE PASS . . .

IN ANY GRANULAR MATERIAL used in flexible base-course widening. For this purpose compacting units are assembled in tandem, (3 deep, single or double row) and towed at side of tractor. Compactor bases of 12" and up may be substituted for standard 26" bases to suit requirements.



SAND FILLS, SUCH AS BRIDGE APPROACHES . . . another spot in which this machine shines. It's rapid and gets into places inaccessible to larger equipment. For the really tight spots one or more of the compacting units may be fitted with operating handles and used as self-propelling, manually guided compactors.

See
YOUR JACKSON
DISTRIBUTOR
or write to us for
complete details
JACKSON
VIBRATORS, Inc.
LUDINGTON, MICH.





STREET-CAR TIES are cut with Wright single-blade gasoline saw at each end for removal. This operator cut 450 ties (900 cuts) in one day recently. Machine is light, gets into tight places.



FORM TIMBERS are cut to dimensions as accurately as with a hand saw—and much faster. Trigger control for throttle, automatic shut-off and upper saw guard are safety features.

Wright Makes Single-Blade Reciprocating Saw

RECIPROCATING PORTABLE POWER SAWS are relatively new to the construction industry. Early last year **CONSTRUCTION METHODS AND EQUIPMENT** described the first one introduced (Jan. 1953, p. 121)—a pneumatic-powered unit with two opposed cutting blades manufactured by the Wright Power Saw and Tool Corp., Stratford, Conn.

This year, the Wright Corp. is producing for the first time a gasoline engine-powered reciprocating-blade saw, with only one blade, that operates over a great range of speeds up to 160 strokes per sec. Its powerful little engine has a direct connection to the saw blade and features a twin-cylinder design, single-firing, to achieve dynamic balance when operating, with no kickback to the operator. A special carburetor keeps the engine running, regardless of saw position, with no swiveling.

The Wright gasoline saw will take a single cut up to 18 in. long, with depth practically unlimited, and it fells trees up to 36 in. in dia. Kerf is less than 3/16 in. and a reasonable mill surface is left

on wood where neat work counts.

Pinching and binding of the blade are eliminated by the extra thin blade, made of a special alloy steel, and blade guide which forms a rigid track.

The blade can be zipped out and another one installed in 30 sec. In fact, the entire saw can be disassembled and assembled quickly without special tools. Teeth require no resetting, and the simple sharpening needed requires only a matter of minutes. The entire saw weighs less than 25 lb. Its unique versatility already is making it popular for an endless variety of jobs, from tree felling, limbing and bucking to trimming branches high up and cutting of timbers and lumber on construction jobs.

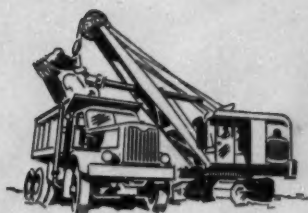
The pictures above show an interesting application in New York. Excavating for a channel to receive electrical cables, Contractors Moore and Lopier uncovered old street-car ties that had been buried in-place. These were cut off neatly and quickly in two places with a Wright gasoline saw. Operator John Hansen cut out 450

ties (900 cuts) in one day. In the second picture, he is cutting 4x8 fir timbers for forms.

A trigger-controlled throttle and automatic ignition grounding stops the saw instantly, should the operator stumble or fall while sawing and release his grip. Another safety feature is the guarded saw blade. The teeth face down and the rigid guide forms a stationary upper surface.

This little saw has to be seen in action to be appreciated fully. Its ability to slice through wood varying from 1-in. board to heavy timber, in any position, is bound to make it a favorite in construction. Square cuts come out as true as with a handsaw—and with much less effort and time involved.

The machine sells for \$295 and a new blade costs \$9.85. Wright officials say their saw is "enormously simple." That is a true statement. They also claim that 90% of the portable power saw market is in the 18-in. size, and under. If this is true, their new gasoline reciprocating model is a strong contender for much of the business.



*"How we solved
the problem
of grease on
clutchbands..."*



A large water and sewer contractor, operating 25 shovels, draglines and tractors, faced an unusual problem — under heavy loads, grease was melting out of bearings and running down over the clutch bands.

Wrong Grease Being Used...

Sinclair Lubrication Engineer R. D. Bangham heard about it during a routine call. "I suspected that the wrong kind of grease was being used," he reports, "and an examination confirmed my belief. Knowing the heavy load and high temperature conditions the bearing lubricant must face, I recommended Sinclair LITHOLINE®."

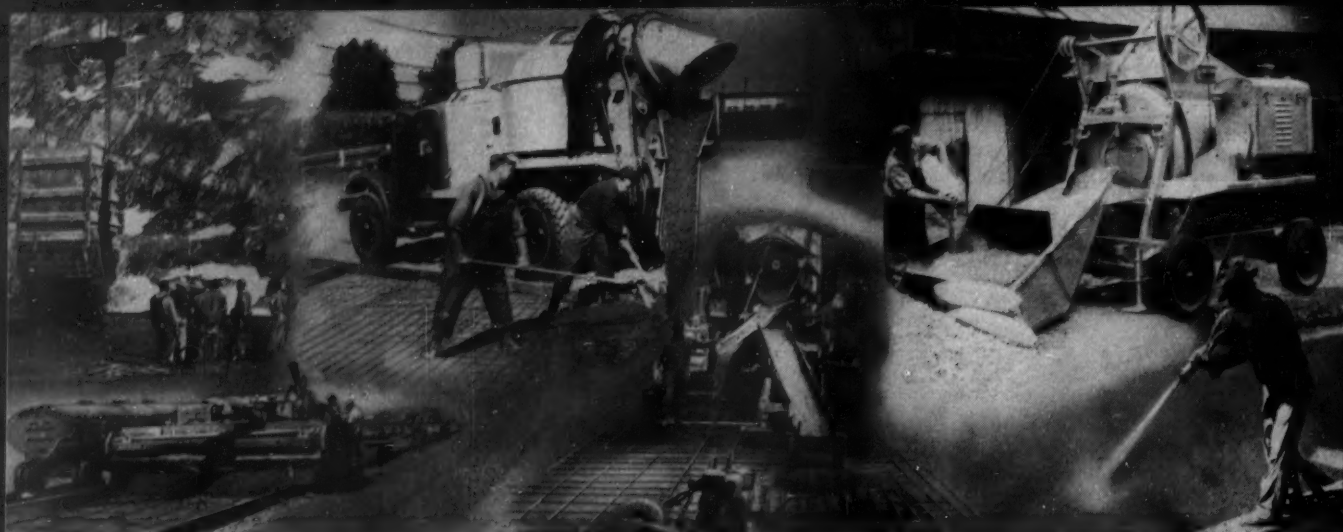
The Superintendent Agrees...

"The job superintendent agreed to a trial run. Two weeks later, he told me that Sinclair LITHOLINE did the job so well that he was ordering more LITHOLINE. He told me that on his next job he would use Sinclair products 100%, and would recommend that his fellow superintendents do the same."

Why not give a Sinclair Lubrication Engineer the opportunity to help with your lubrication problems? There's no obligation. See your Sinclair representative, or write Sinclair Refining Company, 600 Fifth Avenue, New York 20, N. Y.

SINCLAIR LUBRICANTS

CONCRETE MIXING AND PLACING



8. Plants for Mass Concrete

By THEODORE B. APPEL, Jr., Chief Engineer,
The C. S. Johnson Co., Subsidiary Kaehring Co.

MASS CONCRETE PLANTS are set up to produce concrete for one job, always a large and important engineering undertaking. Specifications for the project generally will establish the results to be achieved in the batching plant. Specifications will dictate the mixing plant that will be set up, which is likely to be a new plant, although it sometimes is possible to move in a used plant and modify it to the new conditions.

Influence of Specifications

In the U.S. specifications generally will be those of the Bureau of Reclamation, the U.S. Engineers, one of the large authorities which have been established to construct and operate vast public enterprises, or a private power company. Since the dominating influence is that of the Bureau and the Corps of Engineers, a plant for a private project is likely to be a modification of a plant that has been used on an undertaking of one of the federal agencies. Plant requirements for private projects generally are less exacting, which means that certain

elements of a plant which is suitable for an Engineers' job can be eliminated, reducing the first cost of the plant and also reducing, to a much lesser degree, the operating costs.

But the conclusion must not be drawn that plants for Engineers and Bureau work are unnecessarily expensive. It well may be that the opposite is true.

Contractor's Requirements

The second factor which materially influences the arrangement and construction of a plant for the mass production of concrete is the requirement that it performs at minimum cost. This is a prime consideration to the contractor. The plant must produce concrete at the lowest cost per cu yd. It means production at the required rate with freedom from breakdown, with minimum operating personnel, production of concrete which fully complies with the specifications, and a host of other requirements and conditions. It does not mean the production of the cheapest concrete, using the word cheap

in its generally accepted meaning.

Were one to examine a list of the requirements of a contractor for a plant, and list beside them the requirements as set forth in a specification prepared by the U.S. Engineers for the same job, one could not help but be impressed by the agreement that would exist between the two lists. The government specifications would include a few conditions which would not appear on the contractor's list of requirements. Among these would be the requirement that the plant be able to produce records.

Rated Capacity of Plant

The most important factor is the maximum production rate. In a large measure it will determine bin size, aggregate storage facilities, aggregate production facilities, cement handling and storage facilities, batching, mixing and concrete placing equipment. The maximum rate of concrete production is fixed by the construction schedule. It can only be determined by a detailed and somewhat laborious study or scheduling of individual pours. It is not unusual to find that certain large pours will establish the size of plant required. Other structures may show a scarcity of places to pour, resulting in a smaller plant.

Plant rating sometimes is written into the specifications. Writing
(Continued on page 114)

a **NEW WAY** to fasten metal to wood or concrete!

with

DRIVE-IT

Over 6000 Drive pins were used to install aluminum window frames to structural steel and concrete walls of the new Jefferson Hospital extension in Philadelphia, Pennsylvania.

Architect: Vincent Kling. Contractor: Wark & Co.
Drive-It Tools: F. H. Sparks and Co.

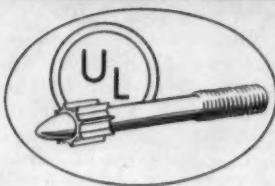


**NEW
EXCLUSIVE**



DRIVE-IT 320
WITH
BREAK-OPEN ACTION

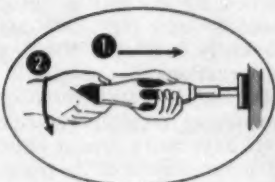
Snap open action results in the fastest operating tool on the market. Easiest method to load and eject cartridges under any condition.



Drive pins are Underwriters' Laboratories approved.



Controlled Power. First and only tool which requires but one standard power load regardless of penetration desired. No need to buy and stock various strength power loads.



Three-way Safety. Cannot be discharged accidentally, due to the push and turn firing sequence. This, plus the large, swivel safety pad, makes DRIVE-IT triple safe.

More fastenings per hour with this speedy way of loading and ejecting cartridges.

DRIVE-IT

the original **POWDER-ACTUATED TOOL**

SEND
THIS
COUPON
FOR FULL
DETAILS

POWDER POWER TOOL CORP.

Dept. I, 7526 S.W. Macadam Ave., Portland 1, Ore.

Canada: Ammo Power Tool Co., Ltd.
735 Broadway, Vancouver, B. C.

- ☐ Please send FREE catalogue and literature.
☐ I want a FREE demonstration of DRIVE-IT.

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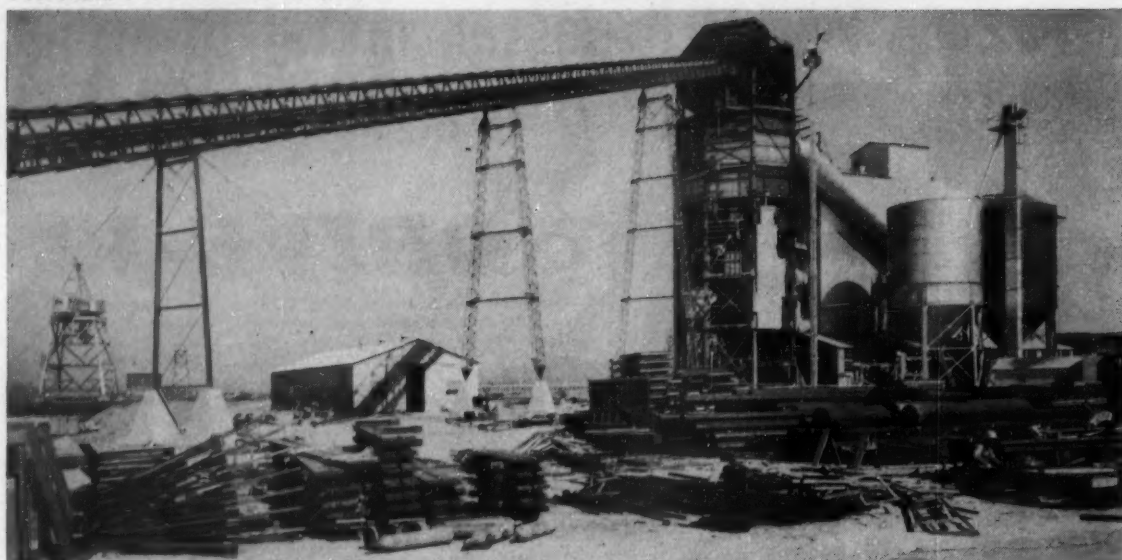


Fig. 1 . . . MASS CONCRETE PLANT at Folsom Dam on American River in California where 25,000 cu yd are poured weekly (page 54). Aggregate conveyor supplies bins; cement storage is at right. Plant now is completely insulated, materials refrigerated.

in of this rate reduces the time required of bidders to prepare their bids and places contractors pretty much on an equal basis when figuring the cost of their concrete plant.

In the early days (20-odd years ago) it was merely a matter of constructing wood bunkers high enough to allow hanging of volumetric batchers or possibly weigh batchers over one or more concrete mixers. The mixers, if more than one were required, were usually placed side-by-side. It was also the commonly accepted practice to furnish a group of batchers, if of the single-material type, or an accumulative weigh batcher for each mixer. Thus, if the concrete for a project were to consist of cement, sand and one stone there would be supplied for each mixer a group of batchers composed of a cement batcher, a sand batcher and a stone batcher. Each group would have been arranged to discharge into its respective mixer.

The wood bunkers would have to be compartmented so that there were several compartments for the cement, several for the sand and several for the stone—depending upon the possibility of charging two batchers from a common hopper, and upon the number of mixers used. In reality these plants were several separate plants built side-by-side. Steel bins were developed soon after.

Credit must be given to C. S. Johnson for two rather important

innovations. He fathered the arrangement which groups about a single vertical axis all the bin compartments, the single-material batchers and the mixers. The large modern front-charge, front-discharge mixer is an essential part of this arrangement. It was largely upon the insistence of Johnson that a mixer manufacturer first agreed to build such a mixer.

Of almost equal importance was the equipment he introduced which permitted the operator to select one of several predetermined mixes and, from his central control stand, simultaneously change the "cut-off" of each batcher so that batchers would weigh up the various materials in the amount as prescribed by the mix selector. This speeded up the batching and markedly increased the flexibility of operations.

In later years provisions for controlling the temperature of concrete have had a drastic effect upon the arrangement of the plant. Prior to World War II, efforts were directed toward removing of the heat of hydration from large concrete masses by a system of imbedded pipes through which was pumped either cold river water or refrigerated water. More recently, much attention has been paid to controlling the temperature of the materials prior to placement. Today we have facilities for batching chilled water, ice, cooling of the coarse aggregates and the cooling of cement. Some attempts have

been made to cool the sand. Most of these attempts have not proved too successful.

All of these developments have culminated in complex, high-capacity plants designed to produce quality concrete with a minimum of labor. Fig. 1 shows the plant provided for the construction of Folsom Dam prior to enclosure of the bin. It is typical of a modern concrete batching plant. To the right are two cement storage silos and a bucket elevator. The refrigeration plant is behind the storage silos.

Bin Sizes

It is not usual for job specifications to establish the size of bin. It must be large enough to insure that a pour, once started, can be completed. This does not mean that there must be sufficient storage in the bin to supply all of the aggregate required for the pour, but rather that there be sufficient storage in the bin to allow uninterrupted production of concrete, in spite of minor breakdowns of material-handling facilities.

Normally, in 1½ hr, a contractor can get his aggregate handling facilities back into operation, provided the breakdown or failure is not one of major proportions. Small interruptions will constitute 90 to 95%, or more, of the total material-handling interruptions.

On large structures where the cooling of aggregates is required, more bin capacity is needed. If ag-

(Continued on page 116)



TWICE THE PRODUCTION — FOR THE SAME \$ INVESTMENT



The clay digging job shown in the picture and reported in the adjacent column is being excavated as shown in the sketch above. Successive cuts are taken at an average depth of 6-8 feet with 105's which provides fastest digging with no danger from undercutting.

Digging in clay without the benefit of preliminary ripping or drilling and shooting was the basis of the test between this Eimco 105 and an ordinary front end shovel loader of equal size and price.

Four trucks of the same size, design and manufacture were used. Two were assigned to each loader.

Results — the Eimco 105 could dig the hard clay easily and load quickly with an inexperienced operator at the controls. One day's production — 153 trucks with the Eimco waiting on trucks much of the time.

The ordinary shovel loader had difficulty digging, was slow to maneuver and loaded 75 trucks in the same time with trucks waiting to be loaded all the time.

This customer bought its second Eimco 105 a week after the first was on the job.

Eimcos deliver on all types of jobs and you can have — "Twice the production for the same \$ investment" — when you use Eimco 105 tractors with loading attachments.

THE EIMCO CORPORATION

Salt Lake City, Utah—U.S.A. • Export Offices: Eimco Bldg., 52 South St., New York City

New York, N. Y. Chicago, Ill. San Francisco, Calif. El Paso, Texas Birmingham, Ala. Duluth, Minn. Kellogg, Ida. London, Eng. Paris, France Milano, Italy

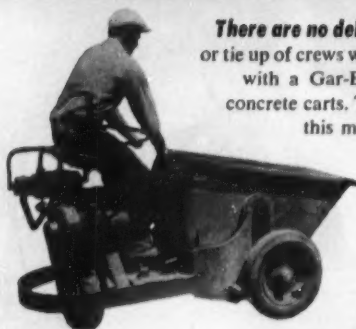


You Can't Beat An Eimco

Proper Placement Promotes Profits



There are no delays on this job—no waiting for concrete or tie up of crews when the concrete placing job is equipped with a Gar-Bro concrete bucket, floor hopper and concrete carts. They are basic tools of the industry. On this municipal stadium job 420 cu. yds. were placed in 10 hours

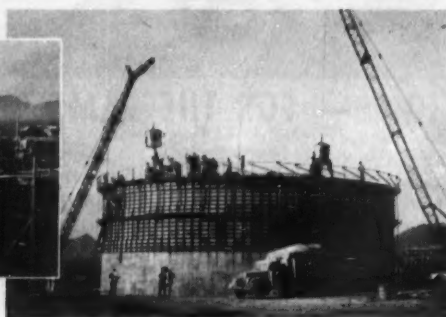


When bucket and crane could not reach the center of a reservoir floor, a fleet of Power-carts shuttled the concrete from a Gar-Bro Portable Hopper to the floor slab forms.



Contractor saves money by discarding fixed tremie stations and using movable Gar-Bro elephant trunks to chute concrete deep into wall forms. Gar-Bro 1-yd. buckets and collection hoppers were used.

40 ft. under water, concrete was placed with a special 4 cu. yd. Gar-Bro bucket converted by addition of a crown top. Gate was air-operated by remote control from barge.



Write for 60-page Concrete Handling Manual

Includes useful tables, references, correct and incorrect methods, unusual jobs solved and other data.



GAR-BRO MANUFACTURING COMPANY
Los Angeles 21, California, 2415 East Washington Boulevard
Peoria, Illinois, 1600 North Adams



CONCRETE . . .

Continued from page 114

gregates are to be cooled by a blast of cold air, sufficient storage must be provided so that the aggregates can be subjected to the cold air blast long enough to allow the transfer of heat from the aggregate to the air. Mere chilling of the surface is not sufficient. A thorough chilling of the stone cannot be accomplished in a short interval.

Considerable knowledge has been gained concerning cooling of aggregates, and studies now under way will add to it. Experience indicates that a storage of less than 2 hr is insufficient for the economical operation of a cold-air cooling system. A careful balancing of factors and costs must be made before the size of bin can be selected where cooling of aggregates is involved.

Aggregate Storage and Handling

The contractor usually will find it advantageous to provide a considerable stockpile of aggregates in an area adjacent to his plant. Certain of the specifications will establish the size of this pile, while others will not. Because of the importance of uniformity of moisture content in the smaller aggregate sizes, it is not unusual to require a storage of sand and the smaller sizes of aggregate for a period of not less than three days.

For insurance against interruptions of transportation facilities, it would be well to have a minimum of 3 days' storage of the larger aggregates also. Unless the source of supply has duplicate production facilities, a breakdown may seriously interfere with operations. Quarry and gravel pit equipment, because of its very nature, generally cannot be repaired in a short time. A weeks' storage of all aggregate is not unreasonable. The magnitude of operations will, with almost no exceptions, require the use of a belt conveyor system.

Cement Handling and Storage

Cement will in most cases be handled by screw conveyor or bucket elevator. This type of equipment has a fine record for dependability. The plant for mass concrete operations is also one of the best fields for the use of other means of handling of cement. For example, in a certain job, because of the rugged terrain, cement could be handled most economically by unloading it at a point upstream from

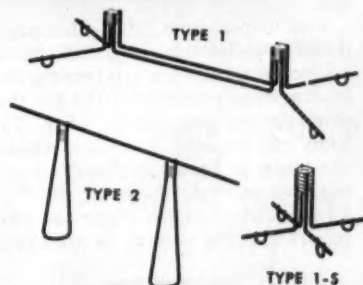
(Continued on page 118)

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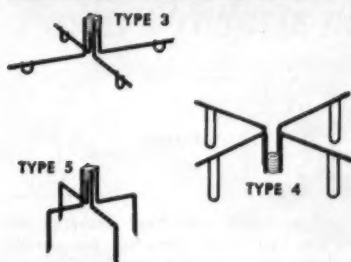
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TILT-UP ACCESSORIES Complete Engineering!

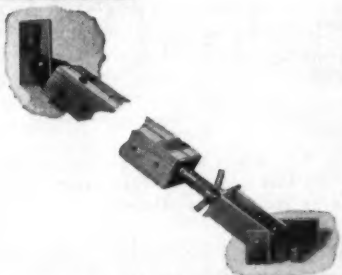
PICK-UP INSERTS



ANCHORS for BRACES



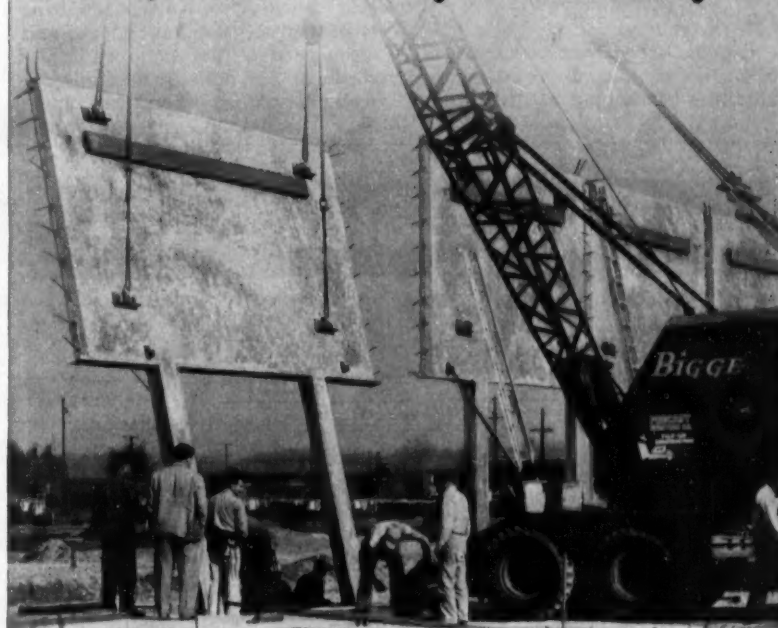
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Our recommendations will be given without charge or obligation on receipt of a set of plans.



42,000 LB. PANEL being raised into position at United Grocers Warehouse, Fresno, Calif. Concrete panels are 8-inches thick with 12-ft. legs. SUPERIOR Pick-Up Inserts, Brace Anchors, and Braces were used. The exclusive pivoting action of the adjustable Braces permitted quick positioning and alignment of the panels. Contractor: Precast Erection Company, Niles, California.

Tilt—Lift—Position!—The proper type of Pick-Up Inserts and Brace Anchors and their location in the slab or precast structural member is of prime importance in order to withstand the stresses occurring when *tilting, lifting, and positioning.*

As pioneers in this field, SUPERIOR has developed various types of accessories and correct procedures and techniques resulting from the experience of thousands of job applications.

The many types of SUPERIOR Inserts, Anchors, and Braces for every job condition together with complete engineering service provide a combination which offers safe and efficient handling of any precast panel or structural member.

For details request a copy of Bulletin TU-2.

SUPERIOR CONCRETE ACCESSORIES, INC.

4110 Wrightwood Avenue, Chicago 39, Illinois

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Pacific Coast Plant

2100 Williams St., San Leandro, Calif.

the dam and pumping it pneumatically to the mixing plant which was located high above the river, not far downstream from the dam. The bin should have a 2- to 3-hr storage of cement. There should be auxiliary cement storage of not less than a 3-day supply. This 3-day supply should be based on the demand for cement when operating at the assumed maximum rate.

Mixers

In the modern mass concrete plant it is unusual to encounter anything other than a tilting-type

Capacities . . . Tilting Mixers

Mixer Size Cu Yd	Mixing Time Min.	Charge & Disch. Time Min.	Total Time Min.	Batcher Per Hr	Cap. Cu Yd Per Hr
2	2	1/2	2 1/2	24	48
2	1 1/2	1/2	2	30	60
3	2	1/2	2 1/2	24	72
4	2 1/2	1/2	3	20	80

mixer. This mixer may be of the rear-charge, front-discharge type or of the type which is charged and discharged at the same end. The stationary or non-tilt mixer is not well adapted for use in these plants

because it cannot be discharged rapidly and does not have the ability to mix concretes made up of aggregates larger than 3 in. in size.

The rear-charge, front-discharge mixers are best adapted for use in a plant where there are two parallel tracks or roadways used for the concrete haulage units (Fig. 2). They can be used in a plant where the track or roadway passes under the two mixers, as shown in Fig. 3. In case of Fig. 3 there are two separate guide spouts, or charging

New Portable Dryer



makes the
Moto-Patcher
A Highly Efficient Hot Mix Plant

The addition of this new portable dryer makes the H & B Moto-Patcher a highly efficient hot-mix plant for all types of patching, including building up weak shoulders, also for use on driveways, parking areas and other small paving jobs.

The dryer drum is 8 ft. long by 30" diameter, with a drying capacity up to 10 tons per hour. Aggregate may be fed by hand or directly from truck by means of a small chute attached to the tail gate. There is a towing hitch for readily attaching to any standard make truck.



New Spreader Attachment

This spreader attachment, which is optional equipment with the Moto-Patcher, is 8 ft. wide and is fully adjustable to specified grade and crown, insuring a uniformly smooth surface even on irregular pavement.

Bulletin MPD-53 gives complete information on the Moto-Patcher, Dryer and Spreader. See your local H & B distributor or write direct.

HETHERINGTON & BERNER INC.

America's First Builders of Asphalt Mixing Equipment

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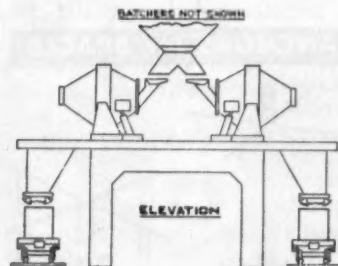


Fig. 2 . . . Rear-charge, front discharge mixers are best where there are two parallel haulways for concrete batches.

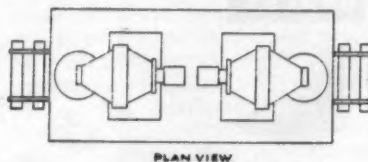


Fig. 3 . . . Mixers in Fig. 2 also can be used where haul track or roadway passes underneath. Spouts guide concrete.

hoppers, and two distinct and separated charging points.

If a common charging hopper works out more advantageously and two mixers are required, the arrangement shown in Fig. 4 is superior. In this case the mixers are front-charged, front - discharged mixers. Where the required capacity is in excess of that which can be produced by two mixers the arrangement of Fig. 5 is most generally used.

Three, four and sometimes five mixers are arranged to receive the materials from the dry batch collecting hopper above. All of these

(Continued on page 122)



weight lifters aren't always available

KEEP YOUR PRODUCT

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Power Products new industrial engine offers

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42% less engine size

NOW you can give your power equipment the Lightweight being demanded by all of industry. Power Products engines are not just a little lighter—they're 60% lighter than any currently available industrial engine of comparable horsepower . . . and that means greater portability for equipment. Wheels, carriages, etc., formerly necessary for portability, can be eliminated in many cases, allowing further streamlining and extra weight and cost savings.

Power Products engines are more compact in design — easy starting — offer sustained performance at high speeds and are easier to service than any other industrial engines. Yet they actually cost less!

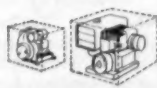
If you want better acceptance — better performance for any industrial product that requires from 2 to 4 horsepower . . . switch to Power Products Lightweight!



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Lightweight — A standard 3½ H. P. industrial engine weighs as much as two and one half Power Products industrial engines of 3½ H. P.



Compact — A unique design makes this engine amazingly compact. A comparison of overall dimensions shows a saving of 72% in size over the standard engine.



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*in the new Timken-Detroit indoor proving ground
... and only Timken has it!*

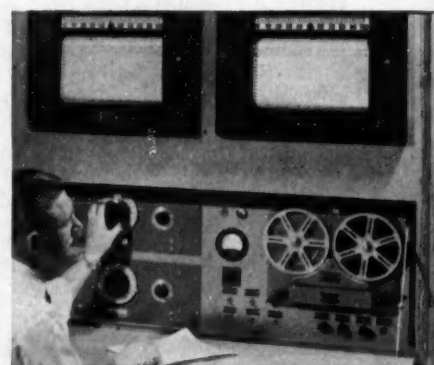
We twist, bend, jounce and jerk them. Duplicate every possible operating condition. Then toss in some "torture-tricks" of our own.

It's calculated destruction! But we know, and can tell you in advance, that a Timken-Detroit axle can take a murderous beating on the job.

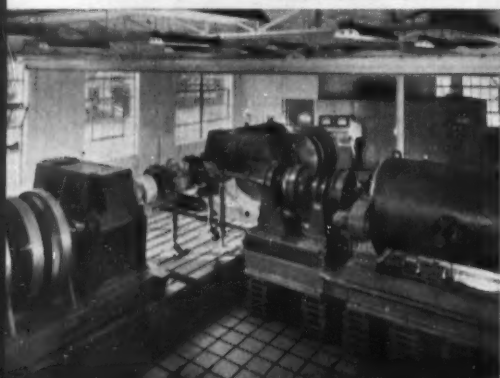
Our "Torture Chamber" is a multi-thousand acre proving ground *capsuled into one room!* In it our engineers can put 50 years of experience to work ... for you ... experience gained in building axles for trucks, buses, trailers, farm

machinery. Stock axles and gearing are subjected *indoors* to any *outdoor* operating condition—under scientific control and analysis.

The result? You enjoy longer axle life; less maintenance, repairs and downtime; lower operating costs, higher profits. Good reasons why Timken-Detroit axles are the choice of the leading manufacturers and owners.



This is our "Torture Tester." He gives axles and gearing the works in the "Torture Chamber." Above him are graphs showing speed and torque performance under any conceivable operating condition. Soft ground ... twisting roads ... long grades or fast highway speeds. With special dials, recorders, and electronic devices he actually *drives* the axle with scientific precision—*from his chair!*



How TDA proves axle quality in this "Torture Chamber"

We take an axle out of stock ... then run a test like twisting the axle shaft 14°, backward and forward—36 times a minute, 24 hours a day, days on end. Or simulate a chuck hole shock every 4 seconds, 24 hours a day for months. Even "bend test" an axle housing for 1,000,000 cycles.

Now get more profitable truck performance than you ever dreamed possible! *Specify...* **TIMKEN-DETROIT 2-SPEED AXLES**

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1. TDA two-speed double-reduction axles of Hypoid-Helical design provide both fast and slow ratios with two sets of "Man-Size" spur gears of liberal capacity. This simple design eliminates small, complicated arrangements of parts... improves performance... increases engine and gear life... cuts maintenance and repairs... fewer service parts required.

2. You get INSTANT, easy shifts... fast to slow—or slow to fast.

3. TDA's wider range of gear ratios... gives you combinations for any hauling requirement. For your present or new truck you can have a fast gear ratio for light loads everywhere—full loads on the level. Slow speed ratio for full loads on hills—for better pulling in "soft going." It all adds up to more profit per load and increased engine life.

4. Hypoid-Helical Gearing increases gear life... requires less maintenance. TDA two-speed axles give you a hypoid gear set in the first reduction... pinion is bigger... more teeth in contact, less load area per tooth. Larger pinion bearings and stronger ring gear. Torque transmitting capacity is increased. Only TDA offers a family of 7 basic axle capacities with interchangeable single speed, single reduction, single speed double reduction and two speed double reduction carriers.

5. Only TDA has "Torsion-Flow" forged axle shafts. This process makes grain structure conform to

profile of shaft. Stresses are uniformly distributed throughout shaft—flange failures are practically nonexistent. Exclusive heat-treating formula gives tough, hard outer surface graduated toward center of shaft... the ideal combination of axle performance characteristics. TDA "Torsion-Flow" shafts have exclusive guarantee of 100,000 miles or three years, whichever occurs first.

6. Only TDA hot-forged steel axle housings prove in tests to be pound for pound the strongest, most rigid ever built. Actually deflect 20% less than conventional housings of same capacity. Rectangular TDA housing shape provides maximum strength, uniform stress distribution, with minimum weight. Ask about "Life of Vehicle" guarantee.

to bits



TIMKEN *Detroit* AXLES

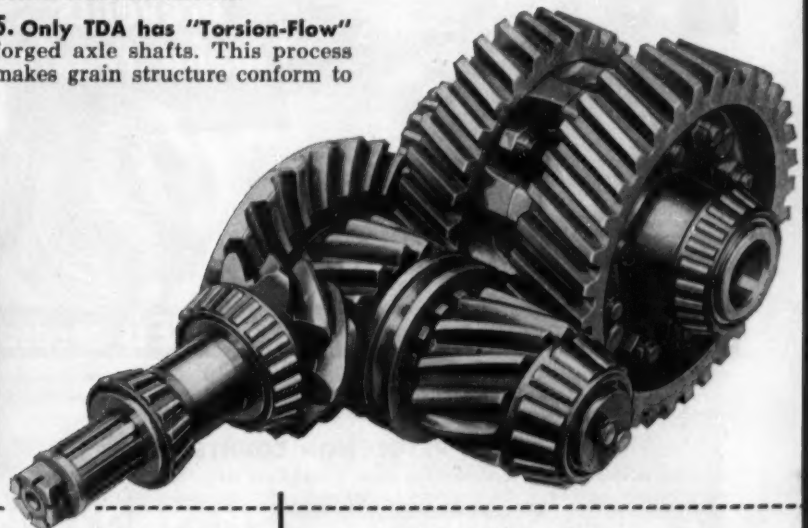
TIMKEN-DETROIT AXLE DIVISION
ROCKWELL SPRING AND AXLE COMPANY
DETROIT 32, MICHIGAN



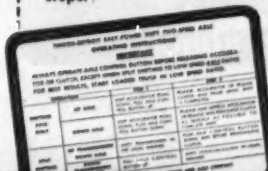
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**WORLD'S LARGEST MANUFACTURERS OF
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FREE! Simple information card explains how Timken-Detroit Easy-Power Shift and Two-Speed axle operates when shifting axle only—or split shifting, in 2 easy steps.



**Timken-Detroit Axle Division
Rockwell Spring and Axle Company
Detroit 32, Michigan**

Please send me the free information card mentioned at left, explaining how the Timken-Detroit Easy-Power Shift Two-Speed Axle operates.

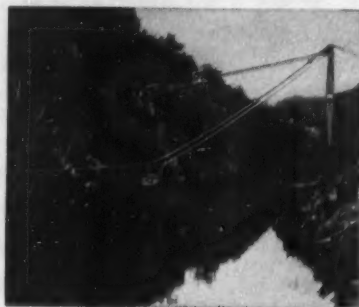
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One man controls . . . a Sauerman Slackline or Tautline Cableway . . . that can reach out 1,000 ft. or more. The Slackline is unexcelled for deep digging, especially under water. The Tautline is best for long range aerial crane work.

Sauerman machines lift, haul and dump any bulk material. Installations span pits, ponds, rivers or canyons. Slackline sizes: 1/3 to 3½ cu. yds. Tautlines: up to 25 tons. Operation cost: just a few cents per cu. yd. handled. Consult Sauerman engineers for specific information on your particular requirements.

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tell when **PROTECTIVE MAINTENANCE** is needed

Powered equipment lasts longer and requires fewer repairs when a definite program of protective maintenance is followed. It pays to know **WHEN** it's time to change oil, lubricate, inspect, overhaul, etc. The **HOBBS HOUR METER** tells you when.

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. . . but an electric timing instrument that shows **HOURS** and **MINUTES** of engine operation. Provides the accuracy that's important for genuinely effective maintenance. Now . . . new and improved through continuing engineering research!

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CONCRETE . . .

Continued from page 118

mixers discharge into a common concrete or gob hopper. Sometimes this hopper is compartmented because of a desire to handle more than one mix at a time.

While it is common practice in construction to charge mixers with a batch 10% in excess of the nominal mixer size, specifications which control most plants for important structures will not allow any charge greater than the rated capacity of the mixers. This is in spite of the fact that the mixer has a guaranteed capacity 10% in excess

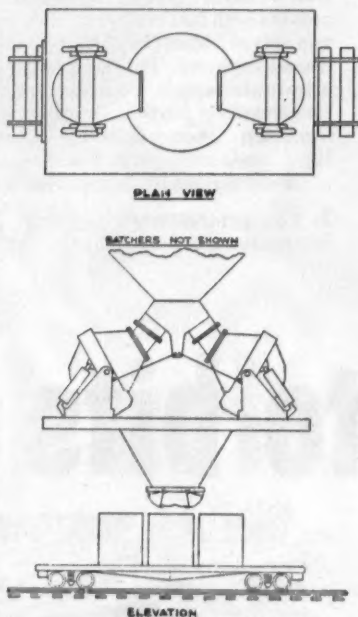


Fig. 4 . . . Two mixers can charge into a common "gob" hopper easily when situation demands it. These are front-charged.

of the nominal rating. Using only the nominal capacities, and using the mixing time prescribed in most specifications, capacities per mixer are shown in an accompanying table. Note that there are two ratings for the 2-yd tilting mixer. The dual rating is given to this mixer because the major specifications do not agree as to the required mixing time for a 2-yd mixer.

Mixer Maintenance

On any large job there will be considerable wear of liners and blades of the mixers. The extent of wear is dependent on the abrasiveness of the sand and aggregate. On the average, blades have to be replaced after a production of 100,000 to 150,000 cu yd of concrete. After
(Continued on page 125)

CedarapidsBuilt by
IOWA

STATIONARY AGGREGATE PLANTS

"Tailor-made" FOR YOUR INDIVIDUAL PROBLEM

What's *your* aggregate problem? Every Stationary Plant installation presents a different problem, both for specification and quantity, and every Cedarapids Plant is "tailor-made" by engineers who have an intimate knowledge of raw materials

as well as the desired finished product. It takes this special Cedarapids engineering to squeeze out those *extra* dollar-making tons of capacity, and meet the strictest specifications. Ask your Cedarapids distributor for details.

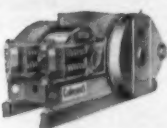
**FLORIDA**

(Above) CORAL ROCK is crushed at a rate of 180 tons per hour in this Cedarapids Stationary Plant designed for the Dearfield Rock Corporation of Ft. Lauderdale, Florida. This installation consists of a 3240 primary Jaw Crusher, a Reciprocating Feeder, a 3042 Double Impeller Impact Breaker for secondary reduction and 8 conveyors of various types.

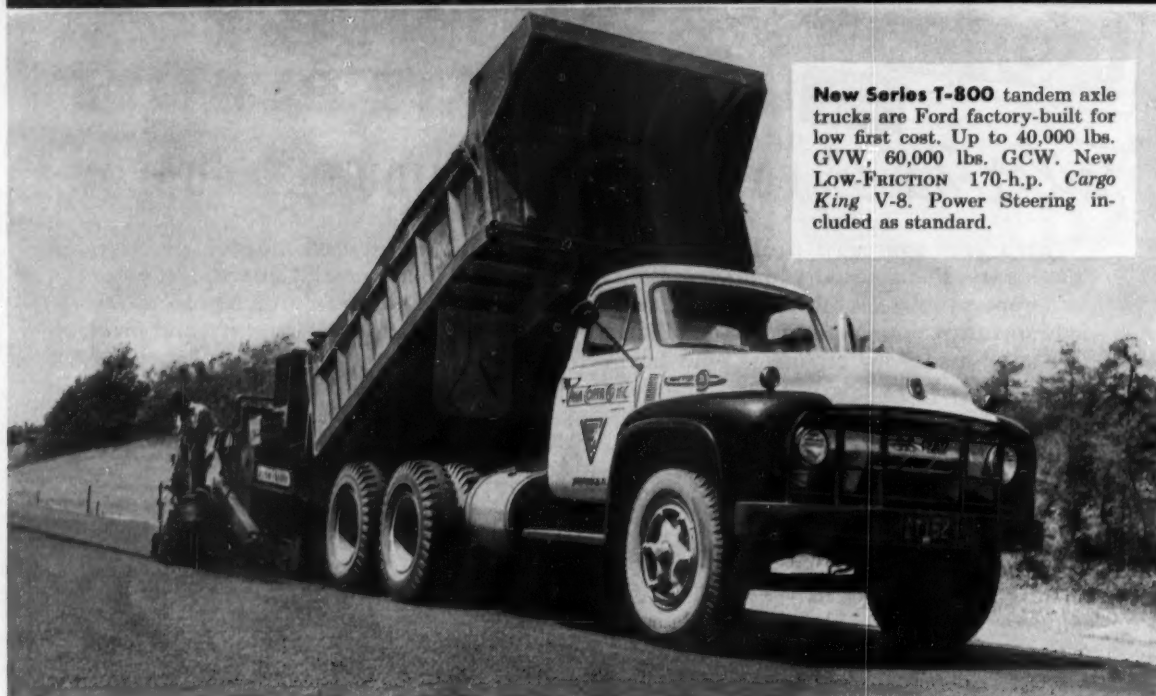
**CALIFORNIA**

(Above) A combination of CEMENTED GRAVEL, GRAVEL AND LIMESTONE was the crushing problem solved in California by McCammon-Wunderlich Company's Stationary Plant which includes a primary Jaw Crusher, another Jaw Crusher and Roll Crusher for secondary reduction and two Horizontal Vibrating Screens. All plant conveyors are equipped with Cedarapids-Schrock Motorized Head Pulleys.

(Below) Crushing GLACIAL GRANITE GRAVEL is another type of operation for which the Stationary Plant owned by E. O. Della & Sons, Northville, New York, was designed. The plant contains a 2222 Double Impeller Impact Breaker, a Water Scalping Tank, a 48" x 12' Triple Deck Screen, a Double Screw Sand Washer, two 48" x 10' Horizontal Screens and 6 various size conveyors.

**NEW YORK****IOWA MANUFACTURING COMPANY • Cedar Rapids, Iowa, U. S. A.****JAW CRUSHERS****DOUBLE IMPELLER
IMPACT BREAKERS****ROLL CRUSHERS****HORIZONTAL
VIBRATING SCREENS****MOTORIZED
HEAD PULLEYS****HEAVY-DUTY
APRON FEEDERS**

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New Series T-800 tandem axle trucks are Ford factory-built for low first cost. Up to 40,000 lbs. GVW, 60,000 lbs. GCW. New **Low-Friction** 170-h.p. **Cargo King V-8**. Power Steering included as standard.

Make Courtesy your Code of the Road!

You get more of the features you need most in a New FORD *TRIPLE ECONOMY* TRUCK!

Here's proof. Your Ford Dealer can give you plenty more!

(Or write Ford Division, Ford Motor Co., Dept. T-9, Box 658, Dearborn, Mich.)

FEATURE	FORD T-800 TANDEM	TRUCK A TANDEM	TRUCK B TANDEM	HOW YOU BENEFIT
Engine				Greater concentration of power! Ford offers more horsepower per cubic inch of displacement. Smaller displacement usually means less gas.
Horsepower per cu. in.	0.536	0.379	0.415	
Piston Stroke (in.)	3.50	4.50	5.00	
Piston Speed ft. per min. (at 3000 rpm)	1750	2250	2500	The slower piston speeds of Ford's Short Stroke design cut piston travel, reduce wear, increase engine life.
Free-turn Intake and Exhaust Valves with Integral Guides	Yes	No	No	Free-turn valves with integral valve guides let valves run cooler, last up to 50% longer!
Cab & Controls				Only Ford offers Power Steering as standard equipment. Cuts steering effort as much as 75%.
Power Steering Standard . . .	Yes	No	No	
Glass Area (sq. in.)—				Ford's "visibility unlimited" means greater truck-driving safety, ease and comfort for the driver.
Windshield.	938	841	735	
Total Std. Cab.	2103	1705	1709	
Seat Shock Snubbers.	Yes	No	No	Only Ford has these two driver-saving features—seat shock snubbers and woven plastic upholstery—that are tops for a smoother, cooler, more comfortable ride.
Woven Plastic Upholstery . . .	Yes	No	No	
Chassis				Money-saving, trip-saving capacities are an important feature of all Ford Triple Economy Trucks.
GVW Rating (lbs.)	40,000	38,000	39,000	
Payload-Body Capacity (lbs.)	29,943	26,067	26,735	Ford's front axle capacity exceeds all other makes by as much as 2000 lbs. for greater dependability, safety.
Front Axle Capacity (lbs.) . . .	9,000	7,000	8,000	
Total Rear Spring Capacity (lbs.)	31,100	30,940	26,000	Greater spring capacity is another example of Ford's sturdier construction for bigger payloads, longer life.

All chart information is based on latest data available as of 6-30-54 and is believed to be reliable but is not guaranteed.

CONCRETE . . .

Continued from page 122

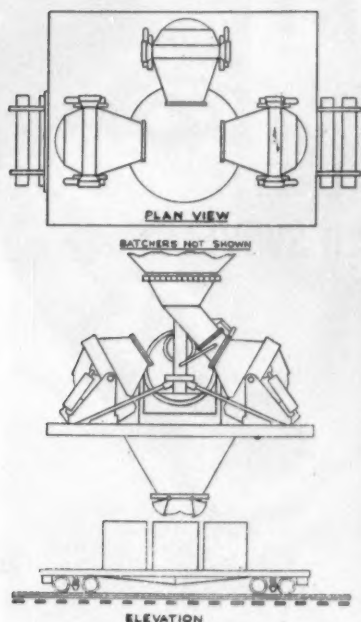


Fig. 5... Three, four, and sometimes five mixers are arranged to receive materials from dry batch collecting hopper above.

producing approximately 200,000 cu yd, it is likely that portions of the inside of the drum will have to be relined. Hard-facing should be undertaken when the construction schedule allows one mixer to be taken out of service. It is not to be expected that the entire drum interior will have to be faced at one time.

Mixers will need no attention other than lubrication, blade replacement and lining. But it is important that the mixer be lubricated in accordance with the manufacturer's recommendations.

Consistency Meters

For many years specifications have required that mixers be equipped with "consistency meters". These are methods or means which will provide either a visual indication or a graphic record of the relative consistency of the concrete in the mixer. Two types have enjoyed considerable use — the watt-meter type and the one known as the Koehring-Claggett consistency meter.

The watt-meter type is essentially an indicating or recording watt meter used to measure the power input into the mixer. There is a relationship between the consistency of the concrete and the power

(Advertisement)



VERTICAL PRESTRESSING OF CONCRETE walls for a concrete water tank is done with a Re-Mo-Trol hydraulic jack. Six wires, which are secured in the bottom of the wall, are prestressed at one time.

Remote-Controlled Hydraulic Puller Perfected for Prestressing Concrete

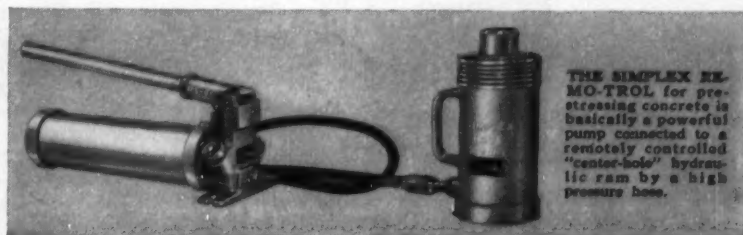
Construction Men Cite
Simplex Unit for Fast, Easy Use

Tensioning cable, wires or rods for concrete prestressing is being done easily and quickly with Simplex hydraulic "center-hole" pullers, a number of construction men report. Because the unit is actually made up of two parts, a remotely controlled ram and a pump, the puller is more easily handled than conventional hydraulic jacks, they explain. The pump unit can be located nearby where it is most convenient for the operator. Many users install a pressure gauge, available as an accessory, between the pump and the puller to check the amount of prestressing applied. This Simplex Re-Mo-Trol puller is also useful on construction jobs as a powerful jack for lifting equipment and building sections, for aligning heavy beams, etc., and for testing the load bearing ability of the soil. Available in 7 models with

capacities from 10 to 100 tons, it works in tight spots and enables workmen to stay at a safe distance while lifting, pulling or pushing.

Made by the world's largest manufacturer of industrial jacks, the Re-Mo-Trol is only one of many Simplex jacks that are useful in the construction industry. Others include the famous Jenny self-contained "center-hole" puller, the No. 310A Emergency Jack which lifts 15 tons on the cap, on the toe, on a cap shoe or at intermediate heights with a chain sling, and standard hydraulic, screw and ratchet lowering jacks. They are all described in General Catalog No. 53. Write for a free copy.

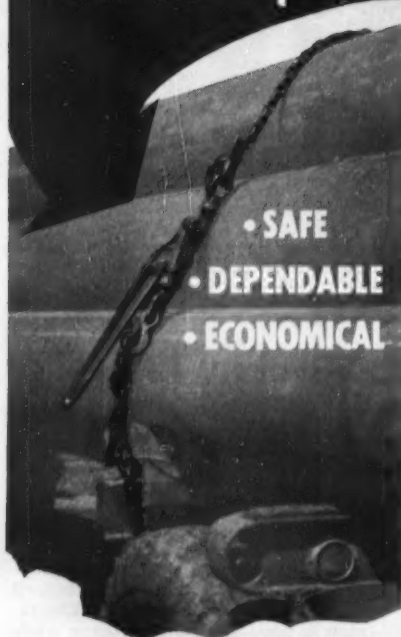
TEMPLETON, KENLY & CO.
2509 Gardner Road • Broadview, Illinois



THE SIMPLEX RE-MO-TROL for prestressing concrete is basically a powerful pump connected to a remotely controlled "center-hole" hydraulic ram by a high pressure hose.

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Handle and linkage gives maximum leverage — clevises, links, and hooks will not deform or bind in roughest service.

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CONCRETE . . . Continued

required to operate the mixer. The drier the mix, the more power required. Unfortunately, other factors besides the consistency of the concrete have a marked effect on power needed. For example, the temperature, type of lubricant, time since last lubricated, and similar factors can so obscure the readings or records produced by the watt meter that consistency of the concrete cannot readily be determined.

In some tilting mixers the drum rotates about an axis which is inclined with the horizontal. The mixers of Figs. 4 and 5 are of this type. The Koehring-Claggett consistency meter depends upon the fact that in such a mixer the center of gravity of the concrete will be located in one place when mixing dry concrete and in another place when mixing very wet concrete. For example, concrete which is dry will be thrown farther toward the mouth by the pickup blades and thus will have a center of gravity of charge in a position closer to the mouth than will a wet mix.

The Koehring-Claggett meter consists of a system of levers arranged to measure the thrust or unbalanced force of the mixer about its trunnion. This consistency meter works quite well so long as the concrete is not too dry. Unfortunately, the very dry mixes used today and mixes which have an air-entraining agent do not produce as pronounced a difference in the thrust on the lever system as could be desired.

Some of the specification writers no longer require a plant to be equipped with a consistency meter. Nevertheless, they still recognize that an accurate consistency record has considerable value. It is likely that consistency meters will be universally used as soon as design can catch up with other technological developments in the production of concrete.

Concrete Hoppers and Gates

The concrete hopper may be merely a collecting hopper, in which case it will not be equipped with a gate at the bottom. The concrete hopper will be equipped with a gate at the bottom if it is desired to store one batch of concrete in the hopper so that the concrete buckets, especially if of the 8-yd size, can be quickly charged by drawing from the hopper rather than by waiting until the mixers are ready to dump. This gate, when

(Continued on page 128)

Look . . .
it SWIVELS!



We mean the tips on those new Smith's Welding Torches. They swivel to any angle you want while flame stays burning! You don't need to shut off gas or stop your work: Just turn the tip to a new angle and away you go!

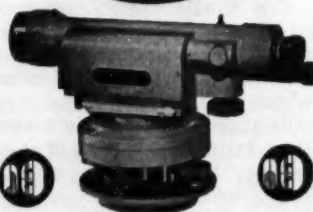
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INSTRUMENTS**



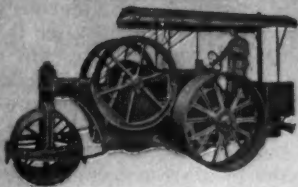
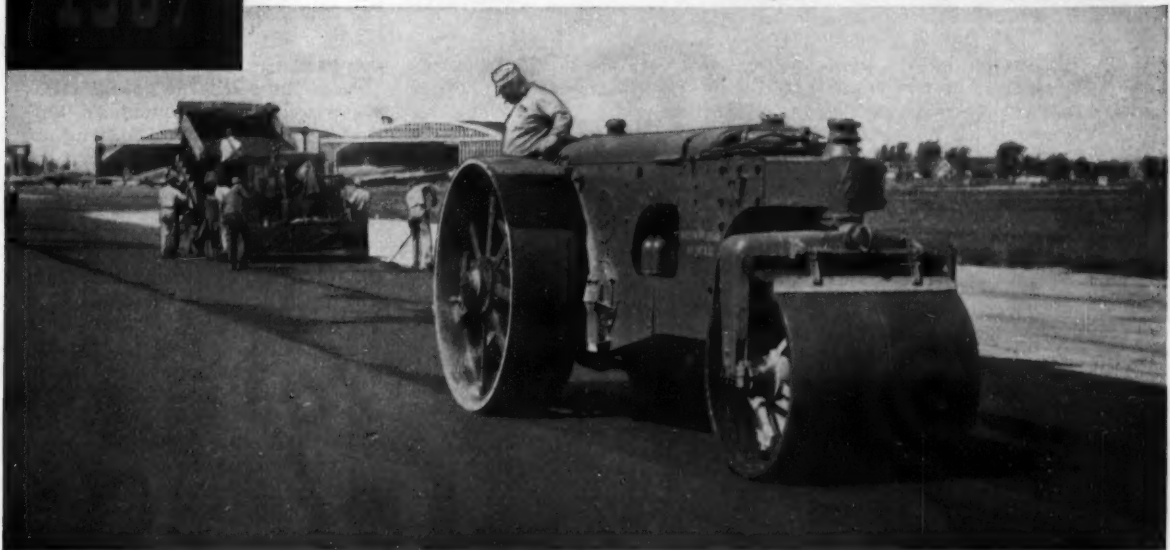
"NITAC" — World's only level with split bubble, erect image. One of many super-fine levels, transits, theodolites, made by Fennel's old-world craftsmen. Performance-proved in 58 countries. Send for particulars, prices.

FENNEL INSTRUMENT CORP. OF AMERICA

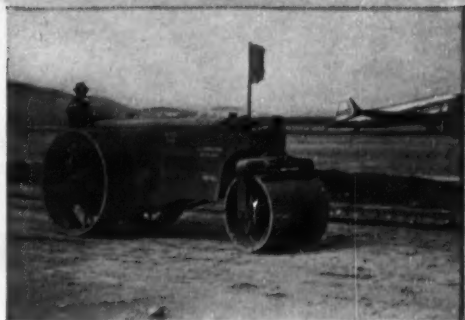
11-27 44th Rd., Long Island City, N. Y.
Dealers in principal cities

SINCE
1907

Famous for Dependability



They said it of the "one-lunger" of 1907, and they say it today . . . "Austin-Western rollers stay on the job day after day, and month after month, with less time lost for mechanical adjustments, maintenance and repair." That's **DEPENDABILITY!** Add to it the precision job of rolling that results from such things as Proper Weight Distribution, Vibrationless Power Units and Smooth Acting Clutches, and you have everything needed for top grade performance. The Autocrat is made in 10- and 12-ton sizes. Each has full-length side plates for maximum rigidity; low center of gravity for smooth operation, and hydraulic power steer. Each may be had with gas or diesel engine. Special equipment includes lights, sprinkling system, canopy top and powerful hydraulic scarifier.



Austin-Western
Power Graders • Motor Sweepers
Road Rollers • Hydraulic Cranes



Construction Equipment Division

Manufactured by
AUSTIN-WESTERN COMPANY
Subsidiary of Baldwin-Lima-Hamilton Corporation
AURORA, ILLINOIS, U.S.A.

CONCRETE . . . Continued from page 126

the concrete is made up of aggregate as large as 6 in, must be quite large—as large as the opening in the top of the concrete bucket will permit.

Concrete should be retained in the hopper only for the shortest possible time because the concrete used today is very dry. If possible, the plant should be operated so that the concrete passes from the mixer through the concrete hopper into the receiving bucket almost without stopping. If a large quan-

tity of concrete is discharged from the mixers into the concrete hopper and allowed to remain there for 3, 4 or 5 min, the vibration from the mixers will have a tendency to

compact the dry concrete. Even though the discharge gate is large, there will be a pronounced tendency for the material to hang up, making it quite difficult to start the flow from the hopper when the bucket has finally been spotted to receive the batch.

The concrete hopper should be, if at all possible, conical in shape and have a slope of not less than 60 deg. with the horizontal. It is essential that there be no pockets, corners or dead spaces which will allow a build-up of concrete.

Batchers

For mass concrete operations the plant will have single-material batchers. An accumulative batcher cannot batch fast enough. The plant will be automatic; materials will be batched simultaneously each to a pre-set weight after the operator has pressed a single "batch" push button. The batchers will not discharge until the operator has pressed a single "discharge" push button, and then they will discharge in a pre-determined sequence which will charge the mixer most rapidly and most efficiently.

True fully automatic operation is not practical because it is seldom possible to dispose of the concrete as fast as the plant can produce it. A concrete bucket or transfer car must be spotted under the gob hopper to receive the concrete. In fully automatic operation the concrete would be discharged on to the track or roadway if the bucket was not ready to receive it. Thus, fully automatic operation is never provided.

The following interlocks are quite likely to be required:

To prevent opening of fill valve of batcher,

- (a) when discharge gate is open.

To prevent discharge of batcher,

- (a) when not up to pre-set weight,
- (b) when over pre-set weight by more than tolerance.
- (c) when fill valve is open,
- (d) unless charging chute is positioned to charge a mixer which is empty and fully

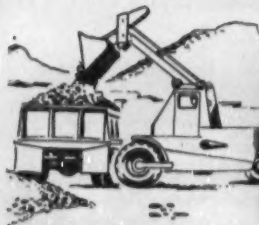
Mass Plant Batchers Sizes

Mixer Size C.Y.	Aggr. Batchers		Cement Batchers		Water Batchers	
	Size C.F.	Cap. Lb.	Size C.F.	Cap. Lb.	Size Gal.	Cap. Lb.
2	38	3,000	20	1,500	120	1,000
3	50	4,000	25	2,000	240	2,000
4	63	5,000	38	3,000	240	2,000



Scoopmobile MODEL H

Shovels, loads, transports all types of bulk materials. Three-wheel maneuverability—power steering—all-hydraulic operation—planetary drive—road speeds to 20 m.p.h.—3/4 yd. bucket (standard). Compare before you buy.



MIXERMOBILE DISTRIBUTORS, INC.

8027 N.E. KILLINGSWORTH STREET
P.O. BOX 7527 • PORTLAND 20, ORE.

- Scoopmobiles • Duo-Way Scoops and Lifts • Stationary Mixers
- 4-Wheel Drive Scoopmobiles, Dozermobiles, Tractors • Mixermobiles

righted and ready to receive a batch.

To prevent closing of discharge gate of batcher,

- (a) when some material remains in weigh hopper. (Scale has not returned to zero.)

To prevent discharge of a mixer,

- (a) until set mixing time has elapsed.

For most plants the batchers should be of the size shown in the accompanying table. The exceptions are those cases where there are, for example, only three aggregates, and those cases where there will be a large volume of what might be called special concrete. Any concrete which is to be pumped or conveyed pneumatically would fall in this category. For these cases it may be necessary to use batchers larger in size than that shown in the table so that the larger than normal quantities of sand or small aggregates can be weighed.

Follow Rules for Safe Scaffolds

Patent Scaffolding Co. makes the point that steel scaffolding is designed to support some overloads and take normal shocks and stress. But the company insists that good safety rules are essential, in spite of safety factors. Here are 10 rules PSC advocates:

1. Make certain that all scaffolds are plumb and level at all times.
2. Tie exterior scaffolding into the wall for every 20 ft of height and every 25 ft of length.
3. Always use guard railings.
4. Never allow climbing on cross-braces. Always use ladders.
5. Use adjusting screws rather than blocking to level the sections.
6. Provide sufficient sills for base plates erected on soft ground.
7. Check tightness of all bolts and wing nuts.
8. For an exceptionally rigid structure, use lateral cross bracing.
9. Use planking of sound quality.
10. Always keep scaffold in perfect condition—never use even slightly damaged equipment.

Underneath the River!



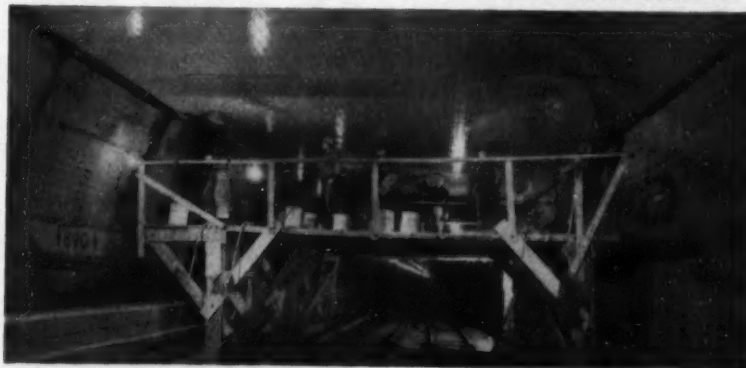
THORITE Patching Mortar Crew at work in Air Tunnel under East River, New York.



Sealing Leaks in Traffic Tunnel with WATERPLUG.



Sealing Drain Pipe Channels in Tunnel with WATERPLUG.



WATERPLUG Crew at work, before placing of tile lining, Battery Tunnels, East River, New York.

On many of the largest underground projects in the Americas and in foreign countries, WATERPLUG solves, for the contractor, his water problems. The job may be small or it may be large, the results are the same—Successful.

Get our 20-page brochure, pictorially describing, in detail, "How To Do It." It's yours for the asking. — No. 140.



Standard Dry Wall Products

BOX X, NEW EAGLE, PENNSYLVANIA



Three pilot models built and tested 6,000 hr result in . . .

The New 1-Yd LS-98 Shovel-Crane

CONTRACTORS, faced with rising costs and keener competition with lower profits, might well investigate the 1-yd LS-98 Link-Belt Speeder Shovel-Crane. The manufacturer is mighty proud of this good-sized shovel that can be conveniently transported over the highways without dismantling.

Announcement of the LS-98 climaxes a project initiated more than 4 yr ago. Three pilot models were built and tested for 6,000 hr in Link-Belt's proving grounds and throughout the country. One model was equipped as a shovel and assigned to digging and handling rock at more than a dozen quarries. Another pilot model went through testing with a 1-cu yd hoe. The other, as a crane, was assigned to building erection. All are said to have demonstrated outstanding capacity and gave excellent service.

One of the factors contributing to the high productivity of the LS-98, according to Link-Belt, is its Speed-O-Matic controls. This is a power hydraulic control utilizing oil under pressure, maintained by a small pump driven by the engine of the shovel-crane. It performs the various functions of the shovel-crane under pin-point accuracy of

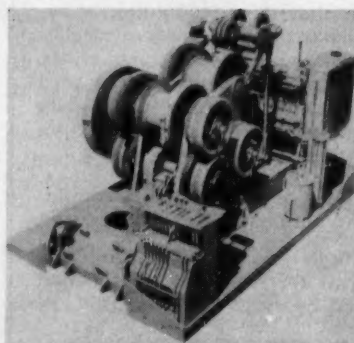
the operator, through short-throw, easy-operating levers from the cab. It's claimed this feature permits as much as 25% more increase in output over machines equipped with manual controls.

Some machines built to full 1-yd capacity tend to reach a point of diminishing returns when it comes to a reasonable transportability and on-the-job maneuverability, say Link-Belt engineers. The designers of the LS-98 believe they have provided a desirable balance between these extremes. Weighing approximately 53,000 lb as a shovel, the LS-98 when loaded on a flat-bed trailer falls within the highway load limits prescribed by many states—without major dismantling.

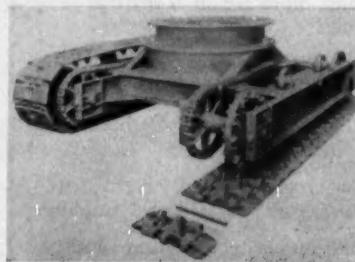
The new machine features power steering and two-speed travel gear as standard equipment. The track system is a patented, self-cleaning system. Digging brakes, as well as all traveling, steering, and digging functions, are controlled from the operator's position in the cab.

The LS-98 also features 14-in. ground clearance with lower frame machinery fully enclosed. No under-hanging of housings or gear cases help eliminate the possibility

(Continued on page 132)



UPPER MACHINERY of the LS-98 utilizes advanced design characteristics. It features Speed-O-Matic power hydraulic clutches.



CRAWLER SECTION has box-section all-welded construction. Standard lower is 12 ft 4 in. with 24, 30 or 36 in. shoes.

135-day job finished 53 days ahead of schedule

*Minnesota contractor
moves 218,000 yds. in 984 hours
with help of Tournapulls*

On road relocation near Deerwood, Minnesota, Feda and Gray Construction Company of Carlos had 135 working days to move 218,000 yards of sand and red clay. Feda and Gray tackled the project with a 7-yd. D Tournapull, a 16-yd. C Tournapull, a 19 mph Tournatractor, 2 tractor-drawn 15-yard LP Carryalls, and 2 other Tournapull-type scrapers. Helped by good weather, this fleet finished the job in 82 working days (984 hours). They moved about 220 yards an hour, much of it over long hauls.

"C" accounts for 5 loads per hour on 1-mile haul

Photos show the C Tournapull loading and hauling pit-run sand and gravel for sub-base finishing. Push-loaded by 93 hp crawler, this machine heaped 13 pay yards of lake-deposited material in 1½ minutes. Haul of 1 mile through highway traffic took 5½ minutes (11 mph average) . . . spread took 15 seconds . . . return of 1 mile along same route, 4½ minutes (13 mph). Total cycle time averaged between 11½ and 12



minutes for the 2-mile round trip . . . output averaged 65 pay yards per hour, despite traffic delays.

Mr. Glen Feda, LeTourneau-Westinghouse equipment owner since 1941, says he particularly likes the short turn radius of the electric-control Tournapulls. "C" can turn around non-stop in an area 30 ft. wide. 7-yard "D" turns non-stop in an area only 25'4" wide. Turns are made electrically through a geared kingpin. Units go through loose, soft and slippery places where other self-propelled scrapers bog down.

Phone or write for demonstration

There are other reasons, too, why Tournapulls will out-produce competitive scrapers in tough going. See them for yourself. We will be glad to make an "ON-YOUR-JOB" demonstration. Just tell us when and where . . . we'll be there.

Tournapull, Carryall—Trademark Reg. U.S. Pat. Off., Tournatractor—Trademark TFDP-544-H-B



LeTourneau-Westinghouse Company

PEORIA, ILLINOIS
A Subsidiary of Westinghouse Air Brake Company



COST LESS TO OPERATE

In addition to the low initial cost of the 1, 2 and 3-cylinder Nordberg "4FS" series Diesel engines, the outstanding design and construction of these compact units assures extremely low fuel and lube oil consumption . . . which has been proved in a wide range of power jobs.

MORE "EXTRAS"

Here are the "extras" that are all included in the low initial cost of Nordberg Diesel units: thermostatically controlled cooling system — heavy duty oil bath air cleaner — lube oil cooler — fuel and lube oil filters. Compare before you buy any 10 to 45 hp engine.

LONGER LIFE

Like all Nordberg Diesels, the "4FS" series engines are sturdily built to give years of reliable service with a minimum of maintenance time and expense.

Clip the coupon for details on Nordberg Diesel power units from 10 to 45 hp—Diesel generator units from 6 to 30 kw.

NORDBERG MFG. CO., Milwaukee, Wis.

NORDBERG

BUILDERS OF AMERICA'S LARGEST LINE OF HEAVY DUTY DIESELS

MAIL THIS COUPON TODAY

Nordberg Mfg. Co., Milwaukee, Wis.
Send catalog covering Nordberg Type 4FS Diesels. I am interested in a unit for the following service: CM

Your Name

Company Name

Address

City..... Zone.... State....

4-553

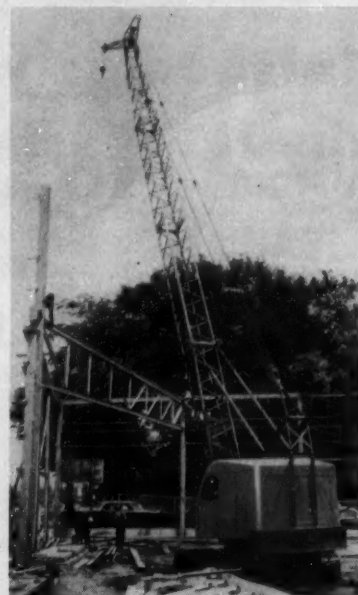
NEW SHOVEL CRANE . . . Continued from page 130

of the unit fouling or snagging.

All clutches on the LS-98 are interchangeable, and the LS-98 shovel-crane offers load-lowering reversing clutches for either, or both, front and rear drums.

Other features which add versatility to the LS-98 include: Conical hook rollers on tapered roller bearings, anti-friction bearings at all vital points, splined shafting throughout, enclosed travel and deck gears running in oil, independent chain crowd for shovel operation, a full-revolving fairlead that reduces dragline cable wear, extended cables for dragline and crane booms, a cab top window for improved visibility and a retractable gantry which is raised and lowered under power.

THIS LS-98 EQUIPPED with 80-ft boom and 15-ft jib proved itself on plant erection jobs in the pilot model stage.



ANOTHER PILOT MODEL was operated on pipeline spread and totalled up 250 mi of crawler travel. Unit can be loaded on a trailer. The LS-98, used as a shovel, weighs 53,000 lb.

More Powerful TD-24 Coming



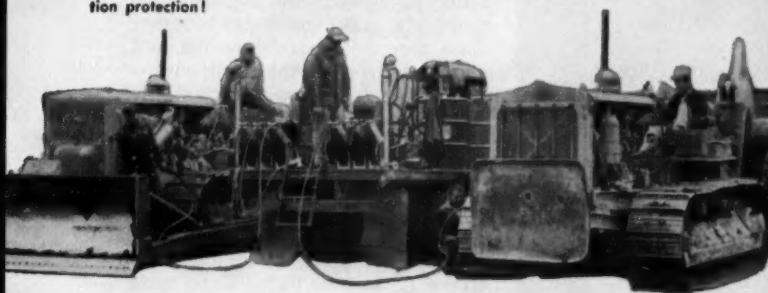
A HYDRAULIC torque converter is featured on the newest International Harvester TD-24, a 200-hp crawler tractor in full production following extensive on-the-job

tests throughout the country. Although designed primarily as a push-loading tractor, the TD-24 torque converter model is adapted readily for land clearing, mining, logging or pipeline work.

It has the same dimensions as the standard TD-24 and all attachments are interchangeable. The power plant on both is the popular UD-1091 diesel with built-in gasoline starting. The torque-converter model operates at 1,500 rpm, the standard engine at 1,400 rpm. Weight of the new tractor, fully equipped and with 7-roller track frame, is 43,250 lb.

Six reels mounted on back of truck, plus one water hose on each side allow the Portable Service Station to service two pieces of equipment at once. Here a giant bulldozer and heavy "Cat" get in-the-field service—no lost time—complete lubrication protection!

Alemite units mount directly on flat truck bed. Lubricant is pumped direct from refinery drum, is delivered to bearings completely free of dust, grit or contamination. 40' high-pressure hoses reach out to serve many fittings on each stop.



**here's how Alemite
Portable Service Stations help**

SMASH RECORDS ON THE BILLION DOLLAR NEW YORK STATE THRUWAY!

**Alemite In-the-Field Lubrication
helps Arcole Midwest Corporation meet
tight time schedules!**

The largest road-building project ever undertaken by man! That's the 427 mile, four lane, New York State Thruway. 80,000,000 cubic yards of earth to move—1,125,000 square yards of concrete to pour—countless underpasses—bridges, including two new ones across the Hudson. Cost, about a billion dollars! And the vast bulk of this mammoth undertaking will be completed within a year and a half, an amazing new record for this type of construction!

To meet this record-breaking pace on their part of this giant project, Arcole Midwest Corporation of Skokie, Ill., assembled 60 odd pieces of heavy earthmoving and grading equipment on their stretch of road outside Schenectady. And to keep that equipment in the top condition it has to maintain, they chose Alemite Portable Service Stations.

Heavy-duty pumps, hose reels, etc., are custom-mounted on a 2½ ton flat bed truck. Equipment is serviced right in the field for this triple saving . . . **1. Save Time!** By bringing complete power lubrication to all equipment right on the job—safely, efficiently! **2. Save Money!** By cutting expensive lubrication downtime—increasing output of both men and machines. **3. Save Equipment!** By greatly reducing the possibility of costly, time-consuming, bearing failure.

Alemite portable service stations Offer these 4 Services



Fast, easy lubrication of track rolls and fittings.



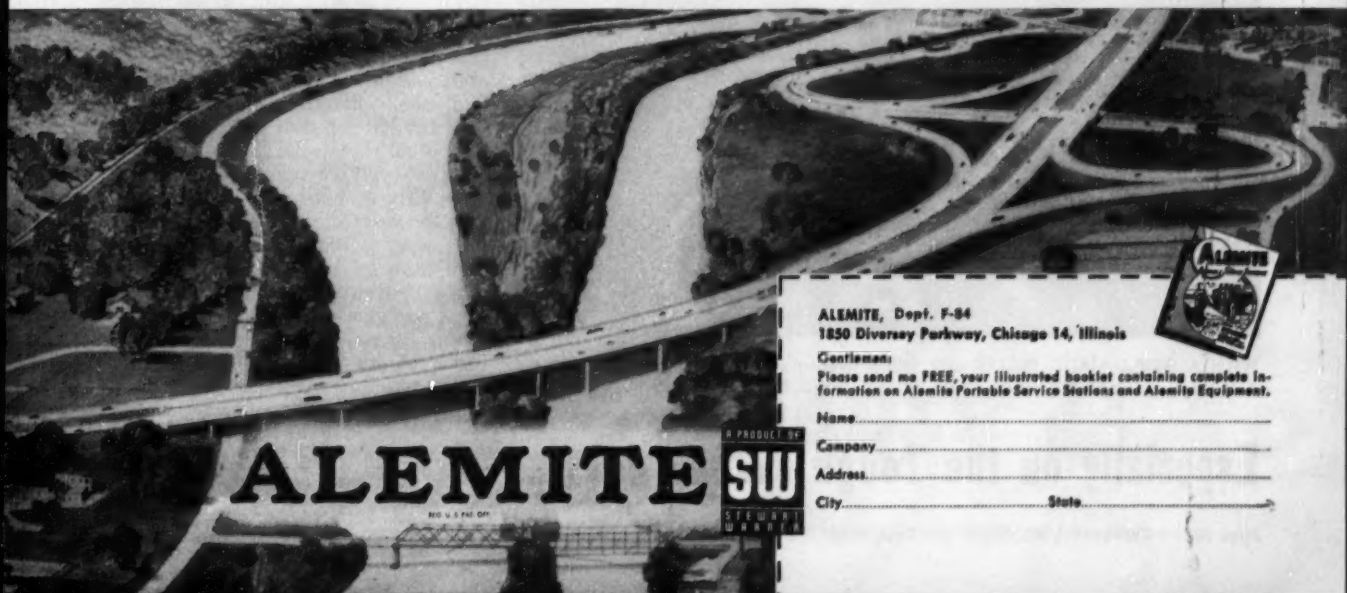
No oil wasted—use exact amount of lube required.



Quick filling of gear housings, transmissions, final drives.



Air line equipment for tire inflating—air jet cleaning.



ALEMITE

A PRODUCT OF
SW
STEWART
WARNER

ALEMITE, Dept. F-84
1850 Diversey Parkway, Chicago 14, Illinois

Gentlemen:

Please send me FREE, your illustrated booklet containing complete information on Alemite Portable Service Stations and Alemite Equipment.

Name.....

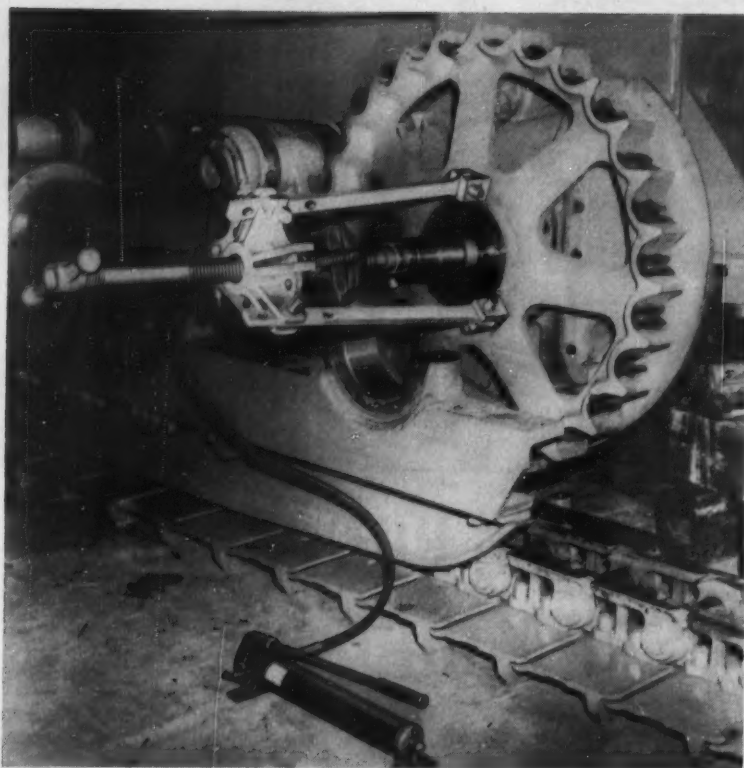
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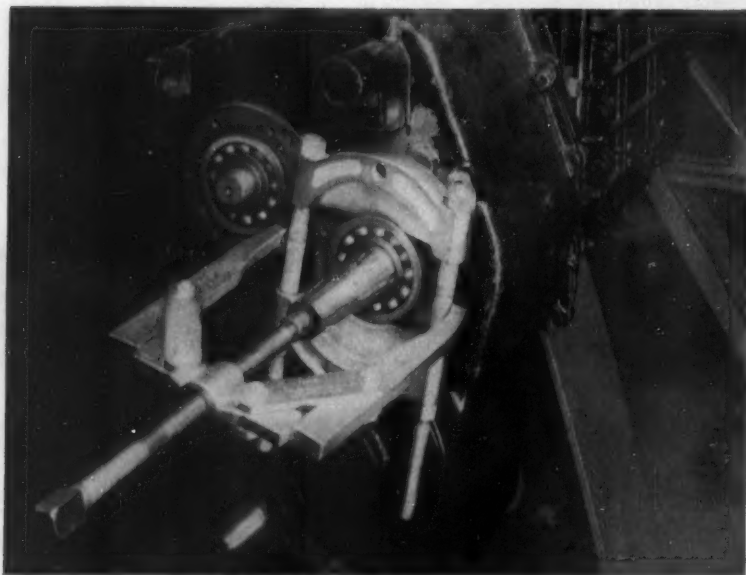
State.....





OTC 50-TON HYDRAULIC SPROCKET PULLER is available for all Allis-Chalmers and Caterpillar models and for the International TD-24. With it you can do the job in minutes.

With the Proper Tools It's Easier...



WITH A GRIP-O-MATIC PULLER used with a bearing pulling attachment removing the dual range countershaft bearing on the M series FWD trucks is a relatively simple task.

Especially on the Tough Pulling Jobs

THE PROPER MAINTENANCE, overhaul, service and repair of large industrial tractors, scrapers, allied equipment and big trucks is definitely out of the sledge hammer class today. Tractors are big and getting bigger; earthmoving equipment and trucks with automatic transmissions, hydraulic controls, power steering are all becoming more difficult to service.

All these new but better features, which help the contractor do more work in less time, require larger, better and more powerful and positive maintenance tools. Good tools in the proper hands can save the initial cost of the tools many times over and by the same token, the lack of tools can cost the contractor expensive delays.

Complete sets of hand tools, including a full range of detachable sockets, open-end box end wrenches, together with an assortment of hammers, chisels, and pliers, are indispensable in the service and repair of any vehicle. The need for these tools is accepted, but a tool that is fast becoming a *must* in any A-1 repair shop is a set of hydraulic pullers and installers. Just ask any maintenance foreman who has been stuck with a couple of tough pulling problems, and he'll quickly point out the value of having such a set of tools in the shop for removing sprockets, sprocket shafts, bearings, etc.

Must Fit and Pull

Hydraulic pullers such as the OTC line, manufactured by Owatonna Tool Co., Owatonna, Minn., are powerful, well-designed and built to do tough removal and installation jobs on heavy earthmoving and truck equipment.

A puller has to have two prime requisites. First, it must be able to hook on to the part properly and then have plenty of power to pull that part. It should also have portability, remote control for safety, and ease of handling.

A difficult job that must be done periodically is the removal of crawler-type tractor drive sprockets. With a hydraulic puller it's simple. Such a tool can give capacities of 50 to 100 tons. The center-hole, remote control OTC Power-Twin hydraulic rams with which these sprocket pullers are equipped are easily and quickly detached for use with other types of pullers as well. The 50-ton ram may be attached for use with other types of pullers. It may be attached to a bar-type puller and utilized to re-

(Continued on page 137)

**There's a lot
you can't see...**

**when you look at a
PAYLOADER®
tractor-shovel.**

YOU CAN'T SEE the 34 years of pioneering experience in building hydraulic tractor-shovels — MORE experience than all others combined!

YOU CAN'T SEE the millions of dollars of parts and service facilities which more than 300 "PAYLOADER" Distributors maintain for their customers' convenience.

YOU CAN'T SEE that 90% of all the "PAYLOADER" tractor-shovels built in the last fifteen years are still in service!

YOU CAN'T SEE the more than 22,000 "PAYLOADER" units throughout the world — more than all others combined!

YOU CAN'T SEE the quality of hidden parts which are built more carefully, to more rigid specifications and with more "know-how" than any other.

The Overwhelming Preference for "PAYLOADER" tractor-shovels is the result of *proven* performance and customer *satisfaction*. Ask any owner or operator.

For complete information contact your "PAYLOADER" Distributor or write to The Frank G. Hough Co., 706 Sunnyside Ave., Libertyville, Illinois.



PAYLOADER®

THE FRANK G. HOUGH CO. • LIBERTYVILLE, ILL.
SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY



Modern as the jet age!

New as tomorrow!



**World's
most
modern
trucks!**

**Yours only with DODGE TRUCKS!
Advanced POWER-DOME V-8's!**

You get efficient power! Unique dome-shaped combustion chamber makes new Dodge truck Power-Dome V-8's the most efficient of all V-8's! Thrifty time-tested 6's, too!



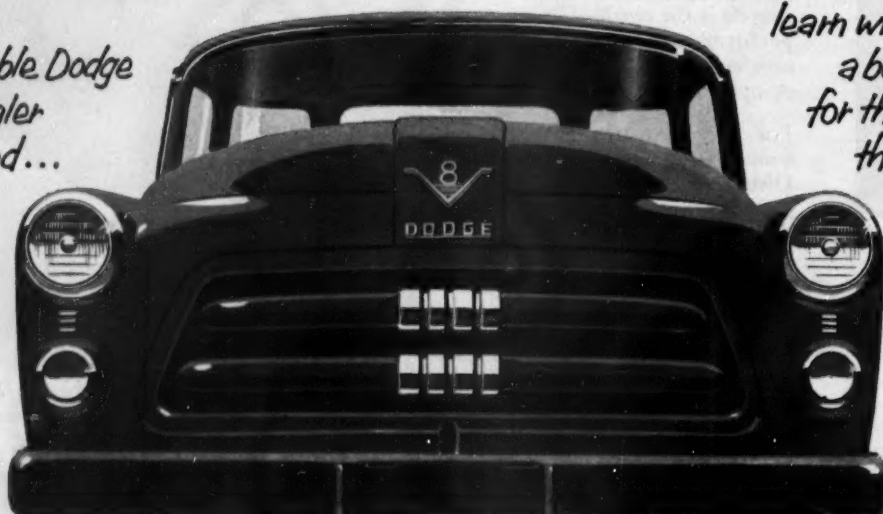
You enjoy greater cab comfort! More hiproom (61 3/4"), more shoulder-room (58 3/4") than any other leading make! Plus 2261 sq. in. of vision area—most of any trucks!

You travel in high style! You get the sleekest, lowest built lines of any truck . . . smart new colors inside and out! And these are the easiest handling trucks of all!

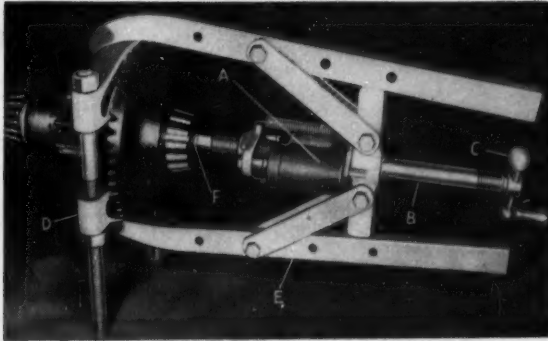


DODGE "Job-Rated" TRUCKS

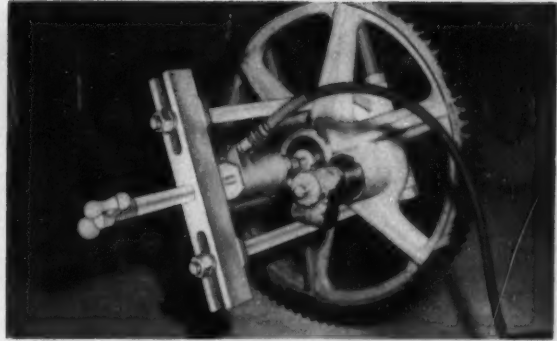
*See your
dependable Dodge
truck dealer
today and...*



*learn why there's
a better deal
for the man at
the wheel!*



REMOVING A MOTOR GRADER cross-shaft bearing presents no problem with a 30-ton ram-and-claw type puller (A) Hydraulic ram (B) Adjusting screw (C) Adjusting crank (D) Bearing pulling attachment (E) Puller (F) Shaft protector.



THIS GEAR CAME OFF in 15 min with a hydraulic puller after 3 men working 2 days gave up.

move gears, bearings, pulleys and sheaves; to a claw-type puller for removing couplings, gears and other tightly fitted parts.

These hydraulic rams also are available in 17½- and 30-ton capacities with complete assortments of attachments and adapters to provide a wide range of utility with these power units. The smaller one can be used to remove and install cylinder sleeves. With this unit, it is claimed an engine can be re-sleeved 75% faster than with any manually operated tool.

Compressing and decompressing the springs in a tractor steering clutch, formerly a slow and risky operation, can be accomplished easily and safely with a hydraulic Power-Twin ram.

These compact hydraulic units provide a tremendous concentration of power which eliminates torque, reduces labor costs, saves on downtime and, very important, contributes to personal safety.

Precision parts on earthmoving and truck equipment must be treated with more respect today. Using the right tool to remove or install such parts cuts down on damages or distortion and saves money.

Earthmoving equipment today is not built with blacksmith methods so it's logical to assume it can't be serviced properly using blacksmith methods.

The right tools will pay off.

Your Wonderful Eyes . . .

"The most wonderful eyes in town belong to you—take care of them!" This is the 1954 slogan of the National Society for the Prevention of Blindness. Remember, too, that eyes must last a lifetime, and spare parts are not available.

(Advertisement)



GRAIN ELEVATOR is restored the modern, low-cost way — with a dense, bonded concrete surface gunned with Bondactor equipment. Single application is possible on jobs like this. And you cut costs on your maintenance work.



PHILADELPHIA CHURCH was completely waterproofed with a Bondactor by John J. Duffin, Inc. A parget coat of sand and cement was shot onto inside walls to form a condensation-proof surface. Then plaster was applied in the usual manner.



KENTUCKY CAPITAL STATUE is wet-sand-blasted using a Bondactor. The State Capitol Building was also cleaned without defacing the original stone by using this Bondactor scouring process. Bondactor wet or dry sandblasting cleans: brick, stone, concrete, masonry and steel.



SEWER PIPE JOINTS are far stronger and stay waterproof and rootproof when they are gun-grouted with a Bondactor. Bondactors are also being used to construct concrete T-joints, elbows, Y-joints and other special joints. Also used to repair broken or damaged pipe.

Concrete Restoration, Waterproofing,
Sandblasting, Pipe-Grouting . . .
You Name It . . . BONDACTORS Do It
Better, Faster, at Lower Cost!

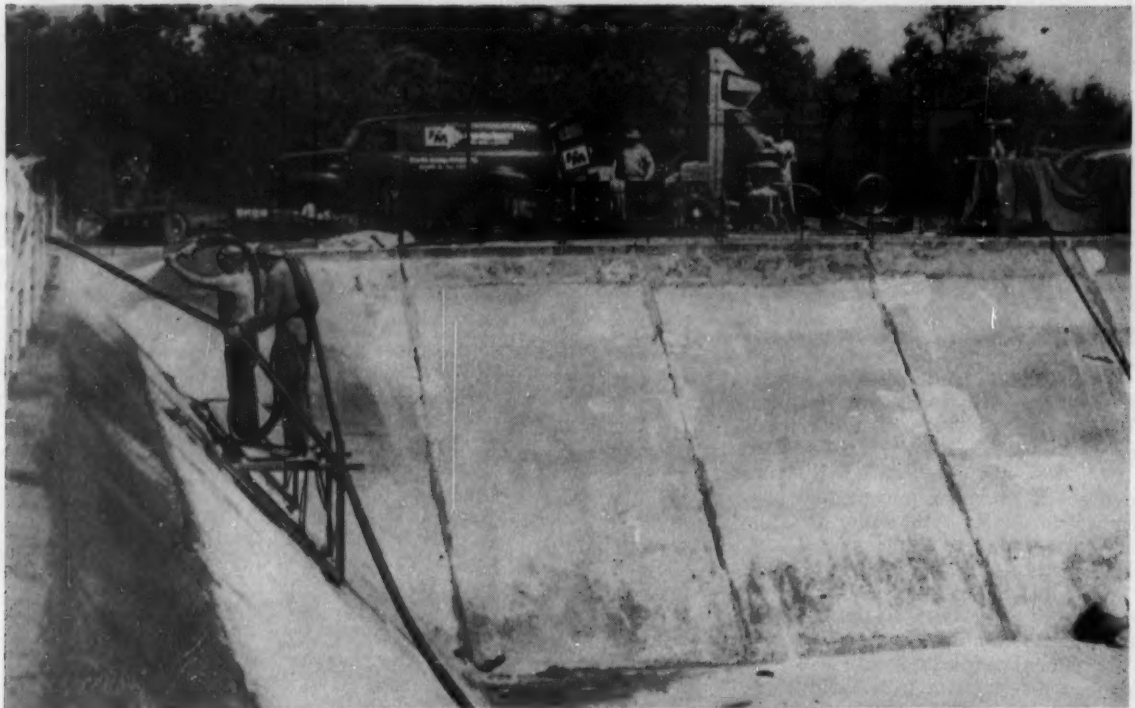
Here's the fastest, best, lowest cost way to restore concrete, insulate, fire-proof, stucco, clean, wet or dry sandblast . . . Bondactor Concrete Gunning Equipment is a real profit-maker!

Accept this Invitation!

Find out all you want to know about the three models of Bondactors now! State intended use and materials to be gunned . . . we'll send you all the facts. Write today!

Air Placement
EQUIPMENT COMPANY

1010 West 24th Street
Kansas City 8, Missouri



272 HOLES were drilled for inspection purposes in the reservoir. Slabs were re-aligned by jacking and voids filled with sand blown

in by high velocity air. Gunned concrete 3 in. thick was then applied over existing concrete.

Old Reservoir Restored by Gunned Concrete

By WILLIAM B. JOHNSON

Supervisor, Water Dept., Easton, Pa.



AUTOMATIC MIXING MACHINE, the Mix-Elevator, speeded up the gunning operation. This unit mixes the sand and cement at a set ratio and feeds it directly to the gunning equipment.

THE CITY OF EASTON, Pa., has helped meet the increasing demands on its water supply by complete rehabilitation of an old auxiliary reservoir built in 1916, through gunned concrete methods.

Examination by Manu-Mine Research and Development Co., contractors for the restoration job, disclosed that water capacity was decreasing due to seepage through cracks in the side walls, which were extensively damaged by disintegration and spalling. Also, erosion of the sub-base had created voids behind many of the side slabs, some which had heaved as much as 6 in. Successful reconditioning required filling of these voids and stabilization of the sub-soil, as well as the complete sealing and resurfacing of the side walls.

Manu-Mine chose Bondactor concrete gunning equipment, manufactured by Air Placement Equipment Co., Kansas City, Mo., to perform triple duty in accomplishing the necessary restoration. Bondactor equipment was used for filling the voids with sand, for sandblasting the concrete surface, and for surfacing the entire reservoir.

For inspection purposes, 272 holes were drilled through the concrete. Wherever necessary, the slabs were re-aligned by jacking, and the voids were filled with sand blown in with the Bondactor using high velocity air. The chemicals used for stabilizing and solidifying the sub-soil and fill sand were also injected

(Continued on page 141)



"I was promised delivery today,

but now I'm told you've no stock of one rope and only half enough of another. This delay is costing me money and plenty of it. From now on it's Roebling for me!" ***

You can count on prompt and full delivery of Roebling wire rope. Your nearest Roebling office and distributor will help you choose the rope that will perform and stand up best in excavating and construction service. And you'll get what you want, when you want it — straight from nearby warehouse stock.



ROEBLING



Subsidiary of The Colorado Fuel and Iron Corporation



JOHN A. ROEBLING'S SONS CORPORATION, TRENTON 2, N. J.
BRANCHES: ATLANTA, 924 AVENUE • BOSTON, 51 SLEEPER ST. • CHICAGO, 5535 W. ROOSEVELT RD. • CINCINNATI, 3553 FREDDONIA AVE. • CLEVELAND, 13155 LAKEWOOD HEIGHTS BLVD. • DENVER, 4801 JACKSON ST. • DETROIT, 915 FISHER BLDG. • HOUSTON, 5216 NAVIGATION BLVD. • LOS ANGELES, 5340 E. HARBOR ST. • NEW YORK, 19 RECTOR ST. • ODESSA, TEXAS, 1930 E. 2ND ST. • PHILADELPHIA, 230 VINE ST. • SAN FRANCISCO, 1740 17TH ST. • SEATTLE, 900 1ST AVE. S. • TULSA, 231 N. CHEYENNE ST. • EXPORT SALES OFFICE, TRENTON 2, N. J.



18-yard 225 hp Terra Cobra TH-0142 with 10-speed transmission gives properly balanced power for top economy, performance and speed over a complete range of job conditions. Every feature was engineered to meet advanced requirements in the field.

Here's how you've helped design tomorrow's earthmover!

Right from the start, you—the operator—the engineer—the service man—have designed the Terra Cobra. That's as it should be, since you live with earthmoving equipment and make it pay off. It started back in the days of 1938 when you told us what you needed, and we put together the first safe and practical unit of its kind with positive power steer, air brakes, and air-actuated power control unit. Your ideas ever since have sparked every advance, right up to the newest big, rugged ten-speed Terra Cobra TH-0142.

Your ever-increasing needs for better equipment will continue to shape new advances to help Wooldridge Earthmovers do a better job faster and cheaper. For instance, here are some of today's Cobra "plus" features which have come out of your experience:

- 10-speed transmission
- Shorter turning radius
- Higher ground clearance
- Lower center of gravity
- "Live" air-actuated power unit
- PCU forward, out of dirt
- True balling bowl loading
- Positive "roll-out" ejection with less tractive effort
- Maximum apron opening
- Positive power steering

- Oversized wheel bearings
- Raised "snorkle" air pre-cleaner
- Full flow lube filtration
- Fuel tank trap with quick cleanout
- Flex hose used wherever possible
- Air filter on governor
- Steering valve with built-in pressure control
- 360° visibility
- Tilt seat stays dry when parked, foam rubber cushioned, with automotive type shocks



Versatile 15-yard, 180 hp Terra Cobra TH-0908 was another development inspired by contractors who said: "We want it." It incorporates same basic design features as larger models.

WOOLDRIDGE

WOOLDRIDGE MANUFACTURING COMPANY

Sunnyvale, California



RESERVOIR RESTORED ...

Continued from page 138

through these same holes. This process is a recent development of Manu-Mine. When the realignment, backfilling and stabilization operations were completed, the inspection holes were filled with gunned concrete. The entire concrete surface was then sandblasted with the same Bondactor equipment. This operation removed all spalled and disintegrated concrete.

Galvanized wire mesh was then anchored to the entire concrete area, spaced approximately 1 in. above the existing concrete. An average 3-in. thick gunned concrete application was made over the area. The gunned concrete bonded to the existing concrete and the buildup has an extremely high density that is unaffected by freezing and thawing.

Concrete gunning was greatly speeded by automatic mixing of the sand and cement with a Mix-Elvator. This equipment automatically mixes the dry ingredients at a set ratio and feeds it to the Bondactor hopper.

The restoration job was completed with this method in less than three months and has provided the city of Easton with the equivalent of a new reservoir at a fraction of the cost of new construction.

Movies Show How ...

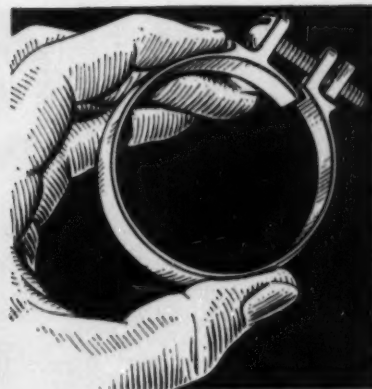
STRADDLE CARRIER OPERATION

—Applications of the straddle-carrier type of industrial trucks in various industries is portrayed in a 25-min sound film recently released by Clark Equipment Co., Battle Creek, Mich. Titled "Over-The-Load Materials Handling," the film was made on job locations all over the country. The Ross Carrier, long identified with the lumber industry, has only recently spread to other industries.

THE LABRADOR IRON ORE

STORY is told in a 25 min, 16 mm. sound-color motion picture recently released for showing to engineering and construction groups. Much of the activity required to build the 360 mi of railroads, miles of access roads, landing strips for airlift supply, hydro-electric plants, town sites and machinery to operate the mighty projects are pictured in this film. The film highlights drainage problems encountered on the project. To arrange a showing write to Armco Drainage & Metal Products, Inc., Middleton, Ohio.

THIS is the CLAMP...



which meets the widest possible range of service on all types of heavy or light wall hose. The strongest of its kind, it is easiest to attach, provides a full-circumference grip on the hose; and can be used over and over again... always with the same sure holding power.

The "KING" Hose Clamp

SINGLE OR DOUBLE BOLT

Made of tough, durable malleable iron... completely rustproofed. Reinforced bolt lugs cannot bend out of shape. Full width tongue assures a perfect seal. Ears for vise jaws are also full width. On the double-bolt style, double-tongue saddles bridge the space between bolt lugs, assuring full-width compression over entire hose circumference.

"King" Clamps are made in Single Bolt style to fit hose from $\frac{3}{8}$ " to $5\frac{1}{4}$ ", and in Double Bolt style for hose from $3\frac{1}{2}$ " to $17\frac{1}{4}$ ". Double Bolt style is illustrated at right.

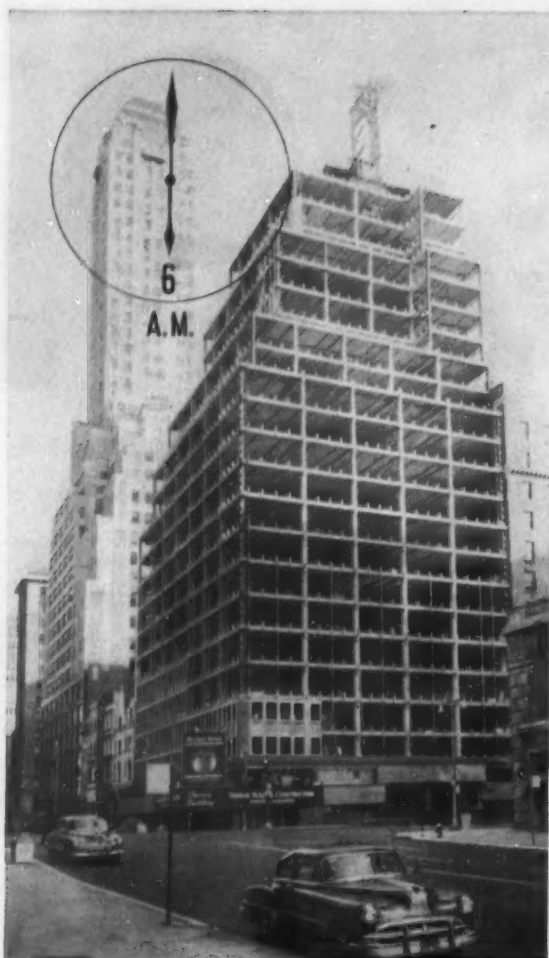


Stocked by Manufacturers and Distributors of Industrial Rubber Products

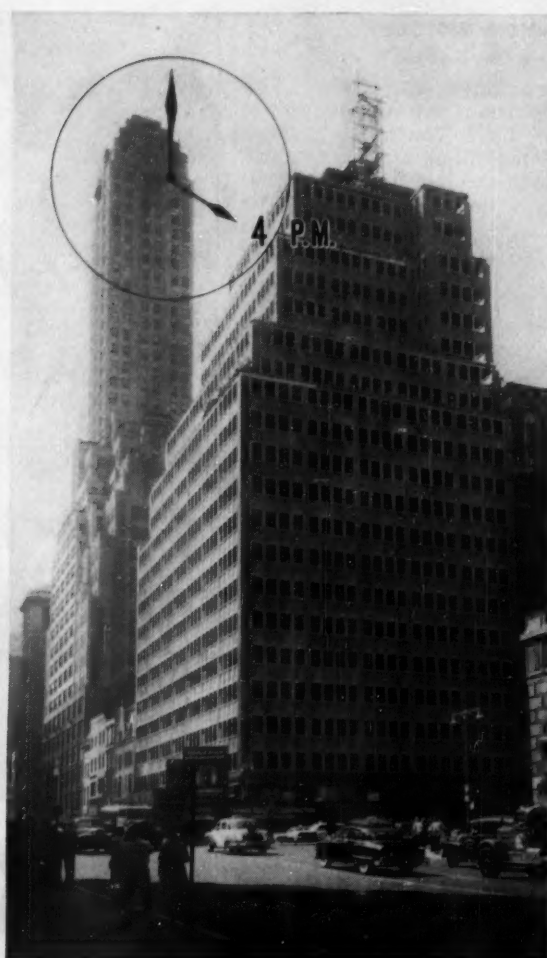
DIXON

Valve & Coupling Co.

GENERAL OFFICES & FACTORY—PHILADELPHIA 22, PA. BRANCHES—CHICAGO
BIRMINGHAM • LOS ANGELES • HOUSTON • DIXON VALVE & COUPLING CO., LTD., TORONTO
ASSOCIATE COMPANIES: SUCK IRON COMPANY, INC., QUARRYVILLE, PA. • PRECISION DRAWN STEEL COMPANY, CAMDEN, N.J.



22-story structural framework ...



... 10 hours later — all walled in

They Beat the Clock...

NO DOUBT ABOUT IT, 'twas strictly a publicity stunt, but the fact remains that 4 teams of 5 men each, plus 20 helpers, took only 10 hr recently to enclose a 22-story office building with prefabricated aluminum panels. Erection was made by the General Bronze Corp. of Garden City, L. I., for the Tishman Realty and Construction Co., Inc., of New York.

The 676 aluminum panels, each containing space for two windows, measured 22ft x 4ft 6 in. by $\frac{1}{8}$ in. and weighed 200 lb each. It took each crew about 4 min to install one panel and 38 men to wall in a complete floor. The panels were bolted to steel brackets welded to the framework of the building. All bolt holes were prepared in advance to small tolerances and the aluminum panels coded and distributed in advance to each floor.

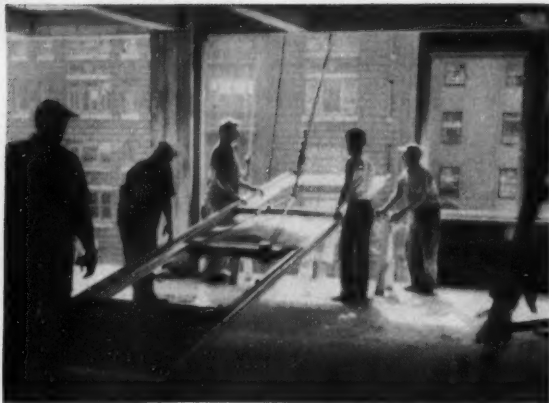
Each panel contains two reversible, vertically pivoted 6-ft-high windows, designed to rotate for safe interior cleaning. A four-faceted geometrical pattern has been die-pressed on the spandrel below each window to provide design, as well as to strengthen each panel.

To make the panels weather-tight, each features a specially designed flange, as an integral part of the unit, which interlocks with adjoining panel flanges, eliminating calking.

All panels have been surfaced with a 5% silicon-aluminum alloy on the outer side and a sound deadening asphalt coating on the inner side. A back-up of 4-in. cinder block and $\frac{3}{4}$ in. insulation up to the window sill height will be added later on to comply with regulations governing fire protection and insulation values.

Trained and Controlled

Crews were exceptionally well trained for the setting of panels and materials had been placed adjacent to installation points on each floor beforehand. The well organized job was coordinated and controlled through the use of an Executone two-way paging and communications system which kept the construction superintendent in touch with operations on each floor.



1 SUPPORTED BY ROPES from pulleys on the floors above, the panels were swung out over the street and lowered into place. The panels weighed only 200 lb each, so were easily handled.



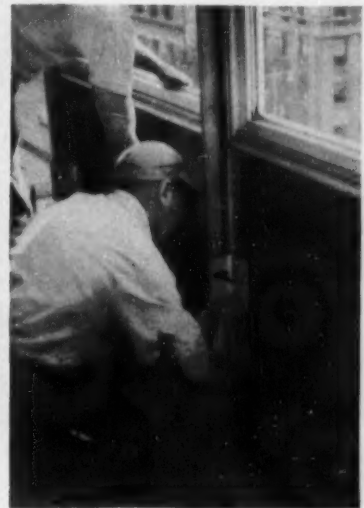
2 ONCE THE PANELS were on the outside of the building they were caught by two men on the floor above and guided into position. It required 4 men to install a panel.



3 THIS WORKER is helping to guide one of the 22-ftx4ft 6 in. panels into place. Each crew consisted of 5 men, plus helpers. All bolt holes were prepared in advance.



4 IN SPITE OF THE FACT that the thermometer was hanging around 100 deg, workmen moved swiftly and finished far ahead of schedule.



5 ONCE THE PANEL was in place, it was anchored with a single 1/2x2-in. cadmium-plated bolt. Later on, finishing crews completed the task of putting all bolts in place.

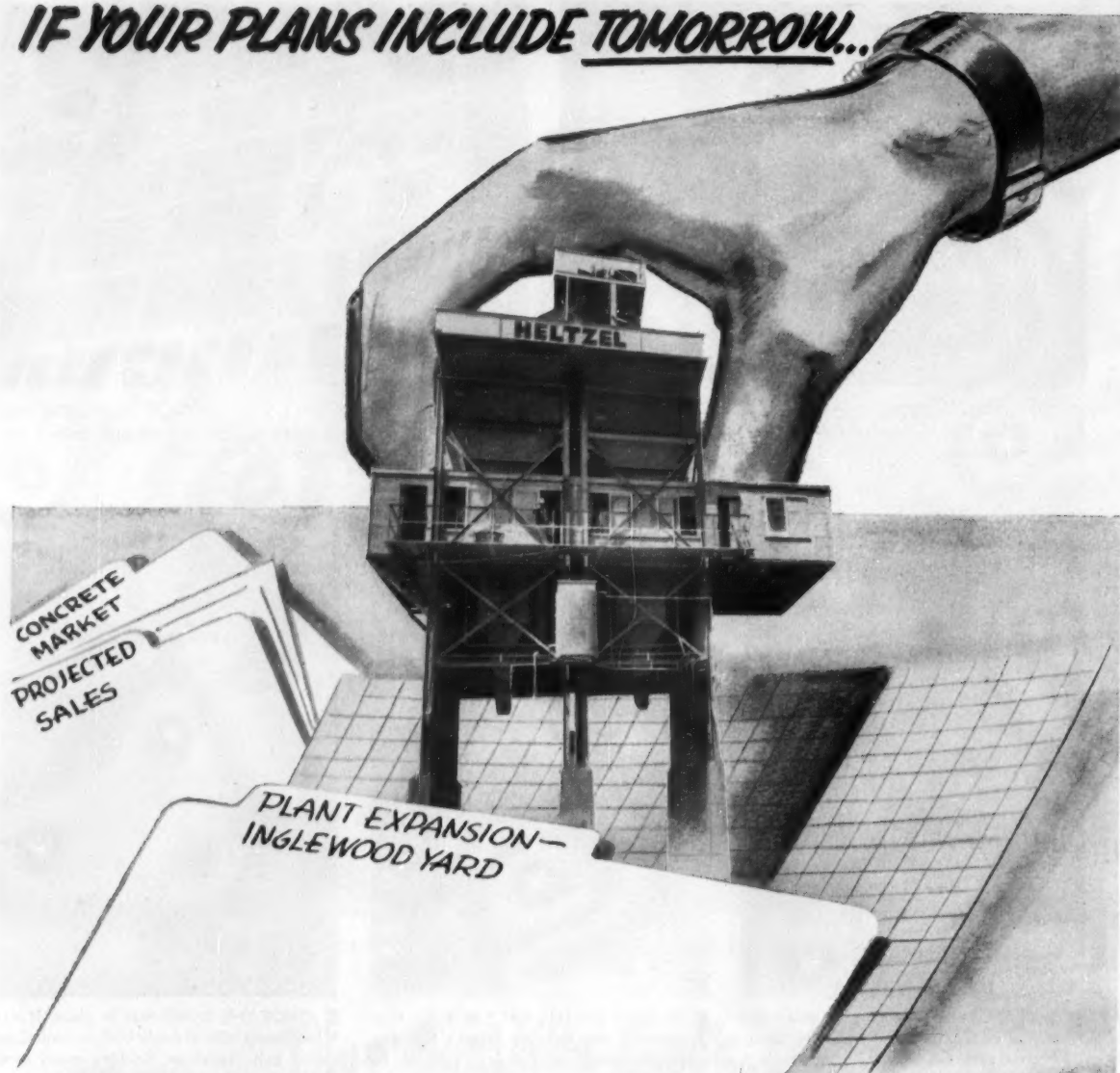


THE MOST DANGEROUS JOB for the erection crew belonged to the fellow who slipped drip flashing into place. All parts, such as this one, fitted perfectly.



PART OF THE SPEED of erection time can be traced to this simple wood jig. The jig slipped over the cross-member of the panel to make a tight fit for hoisting and placing.

IF YOUR PLANS INCLUDE TOMORROW...



...Your Smartest Move Is HELTZEL Today!

Designed to meet future requirements
—engineered for speed, accuracy and
low cost operation — built to give you
years of "around the clock" service ...
three good reasons why it's smart busi-
ness to think of HELTZEL when you're
thinking of concrete batching equip-
ment.

For when you purchase HELTZEL you're
making a sound investment in the future.
You are assured of the very finest qual-
ity, the last word in modern batching

methods, backed by almost 50 years of
batch plant manufacturing know how.

Compare HELTZEL in every way — see
the new Heltzel Type 2 and Type 3
plants — talk with owners and you too,
if you're thinking about tomorrow, will
invest in HELTZEL today!

HELTZEL
BATCHING PLANTS

The HELTZEL STEEL FORM & IRON CO., WARREN, OHIO



7700 Thomas Road

Big Rigs

Pay Off In Profits!

DON YOUNG, SUPT. GLENN OLSON, PRES.



An Actual Job Report from



THE G.A. OLSON CONSTRUCTION COMPANY UP IN MARSHALL, MINNESOTA, IS A LONG WAY FROM BEING A BIG OUTFIT... BUT IT DOES THINGS "IN A BIG WAY." GLENN AND BRUCE OLSON-- BOTH IN THEIR EARLY 30'S-- RUN THE SHOW...



IT'S A TIGHT SCHEDULE, BRUCE, BUT WE'VE GOT THE MEN AND EQUIPMENT TO DO THE JOB.

WE KNOW FROM PAST EXPERIENCE WHAT THOSE BIG INTERNATIONALS CAN DO. WE'LL LICK IT, GLENN!

THE OLSON BOYS STARTED EARLY... BACK IN '42, THEIR DAD, A VETERAN MINNESOTA CONTRACTOR, HAD TAKEN ON A TOUGH ASSIGNMENT WHEN HE PITTED THE G.A. OLSON CONSTRUCTION COMPANY AGAINST THE CANADIAN WILDERNESS. HIS WAS ONE OF SEVERAL AMERICAN OUTFITS PUSHING THE VITAL ALCAN DEFENSE ROAD THROUGH AHEAD OF THE SURVEYORS...

WE'D BETTER FELL A COUPLE OF LOGS ACROSS THIS BOG... THEN BRING UP THE EQUIPMENT IN THE MORNING.

RIGHT, DAD. THEN WE'LL BE SET TO TACKLE THE NEXT 10-MILE STRETCH AT DAWN.

I'LL GO BACK AND GET THE CREW TO 'LEAP-FROG' THE EQUIPMENT THROUGH THE OUTFITS WORKING BELOW.



THE CONSTRUCTION CAREERS OF THE TWO BOYS WERE INTERRUPTED BY THEIR SERVICE IN WORLD WAR II. BUT, WHEN PEACE CAME...



ON JOB AFTER JOB, THEIR DECISION PAID OFF. THE BIG, FAST RUBBER-TIRED RIGS WITH AN ALL-INTERNATIONAL TEAM OF CRAWLERS AND SCRAPERS--PERMITTED LOW BIDDING AND REALLY PROFITABLE PERFORMANCE... WERE USED ON MORE THAN 90% OF THE G. A. OLSON COMPANY JOBS...



AND THEN, IN 1952, CAME ONE OF THE TOUGHEST TESTS... 12 MILES OF REBUILDING ON HIGHWAY 59 IN MINNESOTA. THEY BID \$173,000 FOR 386,000 CUBIC YARDS IN WET, SWAMPY LAND... AND THE BID WAS LOW. THEY HAD ONLY A 90-DAY TIME LIMIT!



IF WE JUST GET A DECENT BREAK IN THE WEATHER, THIS'LL BE A GOOD PROFITABLE JOB.

IT'S GOING TO BE A MEAN ONE IF WE DON'T!



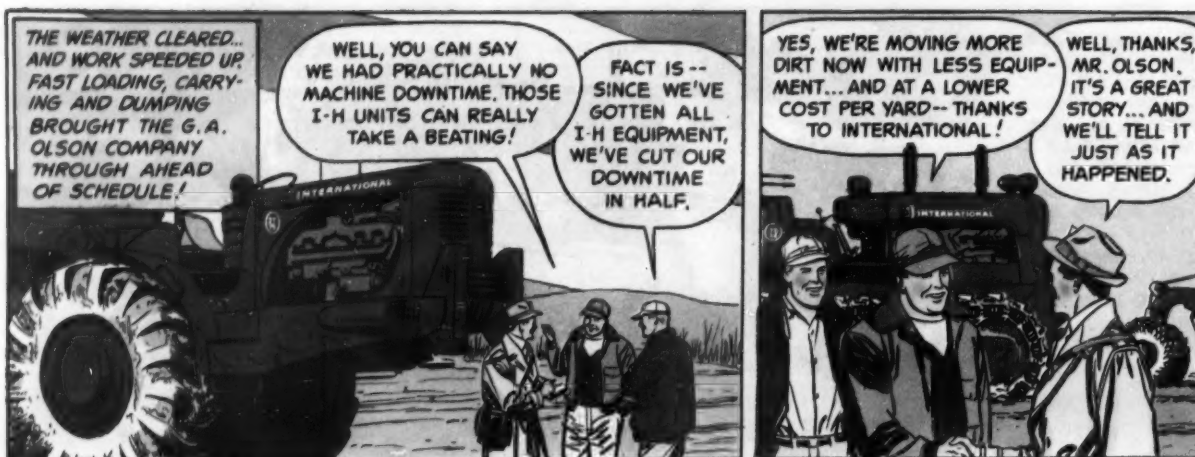
RADIO FORECASTS MORE RAIN... AND PLENTY OF IT, GLENN.

WE'RE RACING THE CALENDAR NOW! OUR INTERNATIONALS HAVEN'T LET US DOWN YET, BRUCE. WE'VE GOT TO KEEP THEM MOVING...

AS RAIN FELL FASTER THAN THE EARTH COULD SWALLOW IT... 14 INCHES IN 10 DAYS... WATER LAY INCHES DEEP ON THE HIGHWAY RIGHT-OF-WAY. ALTHOUGH THE OLSON OUTFIT WAS PINNED DOWN FOR DAYS AT A STRETCH, THEIR EXPERT OPERATORS AND TEAM OF BIG INTERNATIONALS KEPT LOADS OF SOGGY, WATER-LOGGED MATERIAL MOVING ON DAYS WHERE IT LOOKED IMPOSSIBLE...



AS THE TIME LIMIT DRAWS NEARER AND NEARER, MEN AND MACHINES PUSH HARDER AND HARDER IN THEIR BATTLE AGAINST THE ELEMENTS. AND THEN--



INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILLINOIS

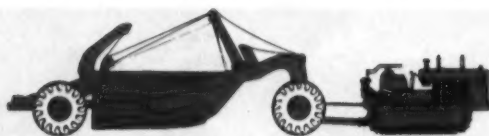


INTERNATIONAL

MAKES EVERY LOAD A PAYLOAD

Now All in One Family

the hardest-working work teams in the world!



TD-24 crawler with matched scrapers



TD-18A crawler with matched scrapers



TD-24 crawler with bulldozer



TD-9 crawler with hydraulic bulldozer



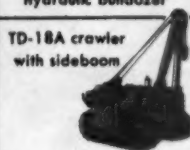
TD-6 crawler with hydraulic bulldozer



TD-14A crawler with cable bulldozer



TD-9 tractor with front-end loader



TD-18A crawler with sideboom



Model 2T-75 two-wheel, rubber-tired tractor with 18-yard heaped capacity scraper



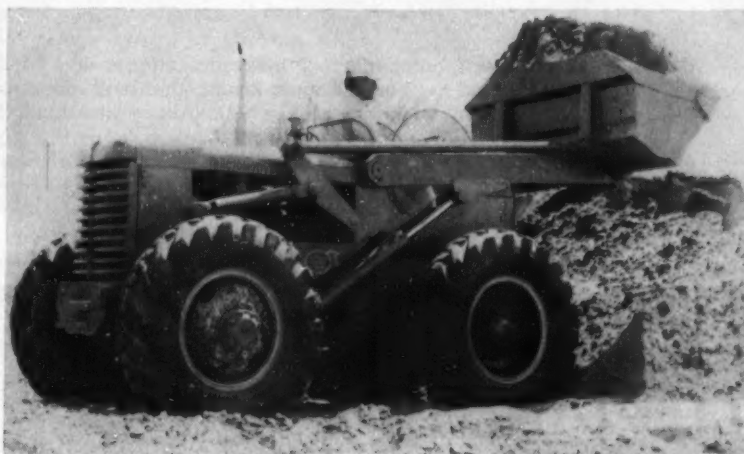
Model 2T-75 two-wheel, rubber-tired tractor with 20-yard heaped capacity bottom dump wagon



Model 2T-55 two-wheel, rubber-tired tractor with 13-yard heaped capacity scraper



Tracto-Loader Digs Clay...



...Loads From Stock Pile...



...Moves in Close to Dump

ANOTHER HUSKY, rubber-mounted front-end shovel is available to contractors. It is the 1-yd., four-wheel drive TL-12 Tracto-Loader, manufactured by the Tractomotive Corp., Deerfield, Ill.

Here is a big-capacity loader that the contractor can use effectively day in and day out as an earth-mover. Its 6-ton mass, Torcon hydraulic torque converter and four-wheel-drive traction give it the controlled and stable digging capacity required of a machine designed for light excavating, as well as for loading from pits and stock-piles.

Tractomotive engineers have made a particular point of incorporating features that make the Tracto-Loader better balanced and more useful in the field.

One such is identical tread width of front and rear wheels—so that only one set of wheels has to break trail in soft ground. Another is a fast reverse. With reverse almost twice as fast as forward in each of the four speed selections, the TL-12 is designed to deliver its load in double-quick time.

One-Lever Control

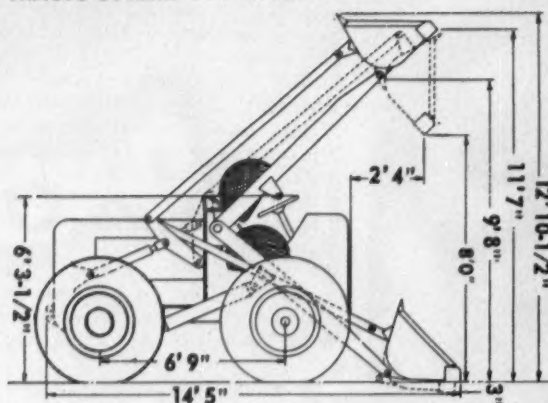
Another feature is one-lever control of direction of travel. A lever at the left hand of the operator is pushed ahead for forward travel and pulled back for reverse; all done instantly without shifting gears in the transmission. An intermediate position is neutral. There are two clutches. As one works, the other rests and they are engaged at low-torque. The single-stage Torcon converter has a torque increase ratio of 3:1.

Bucket capacity is 1 cu yd, it is 75½ in. wide and over-all width of the TL-12 is 86 in., making it readily transportable on the highway. Bucket lifting time is 7 sec, lowering time is 6 sec. Control is hydraulic, through two levers at the right hand of the operator. Hydraulic control valve and pump are by Hydreco, with the pump mounted on the transmission.

The engine is a 4-cyl Allis-Chalmers W226 Power Crater model, gasoline fueled, developing 63 hp at 1,800 rpm. Development work is proceeding on a diesel installation, and the different power plant option is expected to be available soon.

Rough service conditions are the lot of most front-end shovels. Rough service means loosened parts, consequent wear, maladjustment of controls, sloppy operation

TRACTO-LOADER . . . Continued



Specifications

Over-all Length—Bucket on Ground	14 ft 5 in.
Over-all Length—Bucket at Carry	15 ft 7 1/2 in.
Over-all Height—Top of Steering Wheel	6 ft 3 1/2 in.
Over-all Width—Rear Wheel Hub	7 ft 2 in.

Over-all Width—Bucket	6 ft 3 1/2 in.
Ground Clearance	1 ft 3 in.
Reach—Bucket Up Dumped	2 ft 4 in.
Reach—at 7 ft Dumping Clearance	3 ft 3 1/2 in.
Height—to Bucket Cutting Edge Dumped	8 ft 0 in.
Height—Top of Bucket (Max. Raise)	12 ft 10 1/2 in.
Height—Under Bucket Hinge Pin (Max. Raise)	9 ft 8 in.
Angle of Bucket Dumped	48 1/2 deg.
Angle of Cutting Edge at Carry (4 ft 6 in.)	37 deg.
Turning Radius—Tip of Bucket	20 ft 0 in.
Turning Radius—Tread of Outer Rear Tire	19 ft 10 in.
Tread—Front and Rear Wheels	62 1/2 in.
Tires—Front and Rear (8-ply)	13:00 x 24

Weight

Front Wheels	6,470
Rear Wheels	5,530
Shipping Weight (approx.)	12,000

Speeds

	1st	2nd	3rd	4th
Forward	0—2.9	0—5.3	*0—12.0	*0—20.0
Reverse	0—4.6	0—8.5	*0—19.2	*0—25.0

*Road Speeds


and needless friction. Tractomotive has done something about this, too. For instance, security of axle housings on the Tracto-Loader is assured with special frame bosses and pinned connections that impart a friction fit to forestall loosening. Heavy steel plate covers the front

of the TL-12, serving as a bumper when loading trucks, and a frame extension protects the front chassis and drive assemblies. Rear-wheel power steering and hydraulic brakes are standard equipment. Coupled with simple bucket control and single-lever machine revers-

ing, this combination makes a fast-acting loader that will do a big day's work without "beating" the operator.

There is no clutching while loading the bucket. The operator uses only the foot throttle and the buck-

(Continued on page 154)



Simplifies Concrete Cutting
FELKER DI-MET
MODEL 200

MORE MANEUVERABILITY...
LESS WEIGHT...
POWER FOR BIG JOBS OR SMALL!

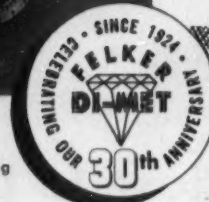
This NEW Felker DI-MET CONCRETE CUTTER meets *all* cutting requirements at LOW COST! Takes deep cuts and covers the footage of *big* machines, yet handles as easy as a baby buggy. Light weight means more maneuverability on close-ups, easier loading for fast transportation. Holds straight and true on long stretches. Uses economical 10" or 12" blade sizes. Cuts up to 3 3/4" deep with 12" blade. 13.5 h.p. Wisconsin engine provides ample power *even* for 14" blades and deeper cuts (by equipping with special blade guard). Hydraulic lift raises blade from cut, velvet-smooth hydraulic retardant eases blade into concrete—saves wear, increases blade life.

ADD ACCESSORIES AS YOU NEED THEM!

This new DI-MET Model 200 is available as a BASIC UNIT or may be purchased with additional accessories. POWER DRIVE and COOLANT PUMP ASSEMBLIES can be field installed. STARTER, GENERATOR and BATTERY must be ordered with the ENGINE. Choose what you need, buy what you want!

Many other exclusive features—ask for circular!

Made by the only manufacturer building both CONCRETE CUTTING MACHINES AND DIAMOND WHEELS... the winning combination that means more footage at less cost!



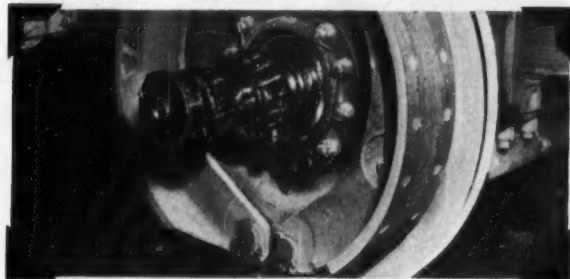
FELKER MANUFACTURING CO.
TORRANCE • CALIFORNIA
World's Largest Manufacturer of Diamond Abrasive Cut-off Wheels and Machines

THE ENGINEER'S REPORT

DATA
LUBRICANT *RPM Wheel Bearing Grease*
UNITS *Wheel bearings - 75 trucks*
OPERATION *Hauling in city traffic*
CONDITIONS *Continual shock loading*
FIRM *The Lowrie Paving Co., Inc.,
San Francisco*

No wheel bearing failures on 75 trucks in 7 years!

CLEAN BRAKE LININGS and no wheel bearing failures due to lubrication in assemblies lubricated with RPM Wheel Bearing Grease. That's the 7-year maintenance record on 75 dump and pick-up trucks operated by the Lowrie Paving Co., Inc., San Francisco. Other grease tried in some wheels melted and caused loss of bearings. These trucks haul heavy loads of dirt and hot asphalt through city streets; wheel assemblies are subjected to countless shocks, are kept hot by stop-and-go driving in slow-moving traffic.



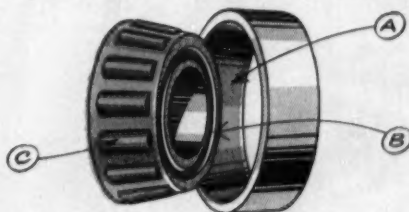
OPERATED 1125 HOURS SINCE LAST PACKING, this bearing assembly still contains plenty of clean grease. Note clean brake linings and backing plate. Even in these hot operating conditions, RPM Wheel Bearing Grease stays all through bearings, does not melt or leak out onto brakes.

REMARKS: The Lowrie Paving Co., Inc., has used Standard Oil Company of California products since 1930, has used RPM Wheel Bearing Grease since 1946. This grease is made with high quality paraffin base oils, contains no harmful fillers. It maintains correct and uniform consistency under all operating conditions, and is stable in storage. Comes in medium and heavy grades.



TRADEMARK "RPM" REG. U.S. PAT. OFF.

How RPM Wheel Bearing Grease protects bearings under all conditions



- A. Provides a tough, resilient lubrication film that protects against heavy pounding and overload pressures.
- B. Sticks tightly to all bearing surfaces ... feeds slowly and stays in smallest clearances.
- C. Resists water and extreme heat... won't melt and run off onto brake linings.

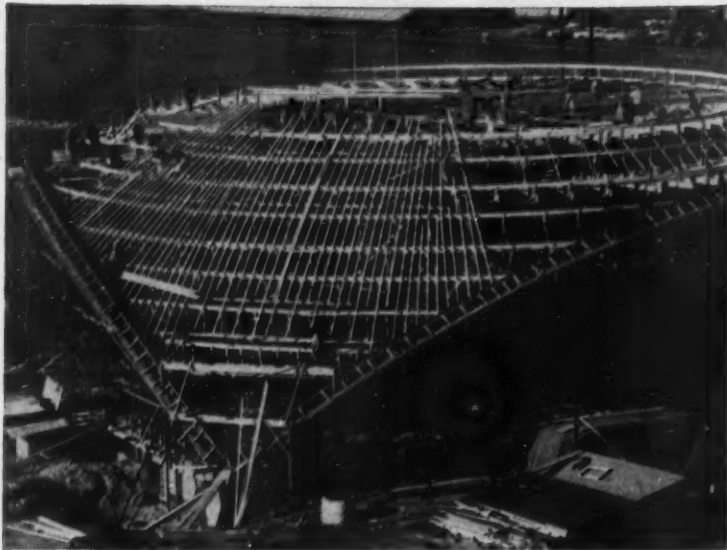
FOR MORE INFORMATION about this or other petroleum products of any kind, or the name of your nearest distributor handling them, write or call any of the companies listed below.

STANDARD OIL COMPANY OF CALIFORNIA, San Francisco 20 • STANDARD OIL COMPANY OF TEXAS, El Paso
THE CALIFORNIA OIL COMPANY, Barber, New Jersey • THE CALIFORNIA COMPANY, Denver 1, Colorado

(Advertisement)

Shoring News in Pictures

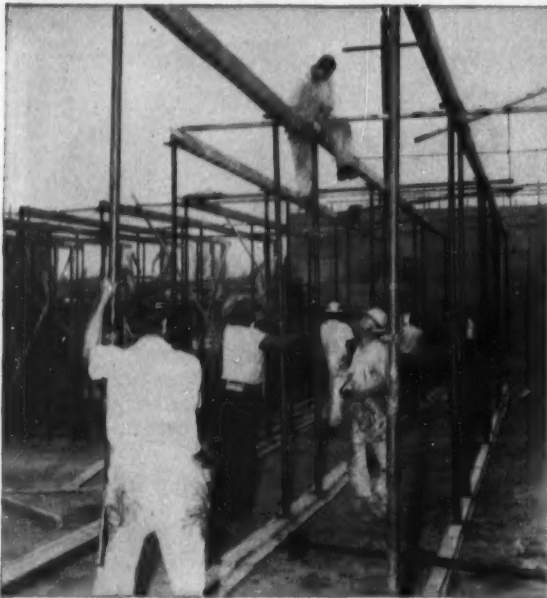
... by PS Co



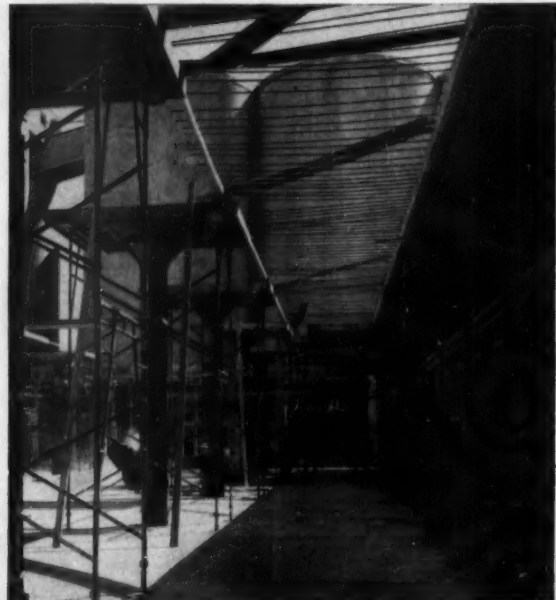
SPHERICAL TRIANGLE—Defying the theory that huge structures must be supported by columns and beams, this unique auditorium at Massachusetts Institute of Technology is a thin-shell concrete dome ($\frac{1}{8}$ th the surface of a sphere) supported on only three slender reaction points. To solve the problem of supporting wood forms and green concrete, George A. Fuller Co. uses an all-steel shoring assembly built-up of 1400 "Trouble Saver"® Sectional Scaffolding frames. Concrete is $3\frac{1}{2}$ " thick on the dome, $5\frac{1}{2}$ " at the edge beams and 20" at the three buttresses. Absence of columns will give 1,200 spectators a clear view of all events.



RE-USED 5 TIMES — To shore 37" strandrel beams on 4-story warehouse in Jersey City, N. J., contractor uses 24"-wide "Trouble Saver" Ladder Scaffolds spaced 7' apart. For supporting 10"-12" floor slabs, 5'-wide "Trouble Saver" frames were rented in sufficient quantity to shore one half of one floor, then re-used five times.



'BEST WE'VE EVER USED'—Burton Shores earn highest praise from general contractor C. R. Park, whose first use of these new steel units was on building for Bekins Van & Storage Co., in Pomona, Calif. "They are easier to handle and adjust . . . save many dollars", Mr. Park says. 762 Burton Shores, rented for the job from the Patent Scaffolding Co., were used to support 8½"-thick slab. Here, Shores are being raised by adjusting handle to level of those previously placed while workman sets 4x6 stringers. Shores were spaced 4' apart in both directions. To buy or rent PS Shoring, see the Yellow Pages in your 'phone book for nearest Patent Scaffolding office or representative.



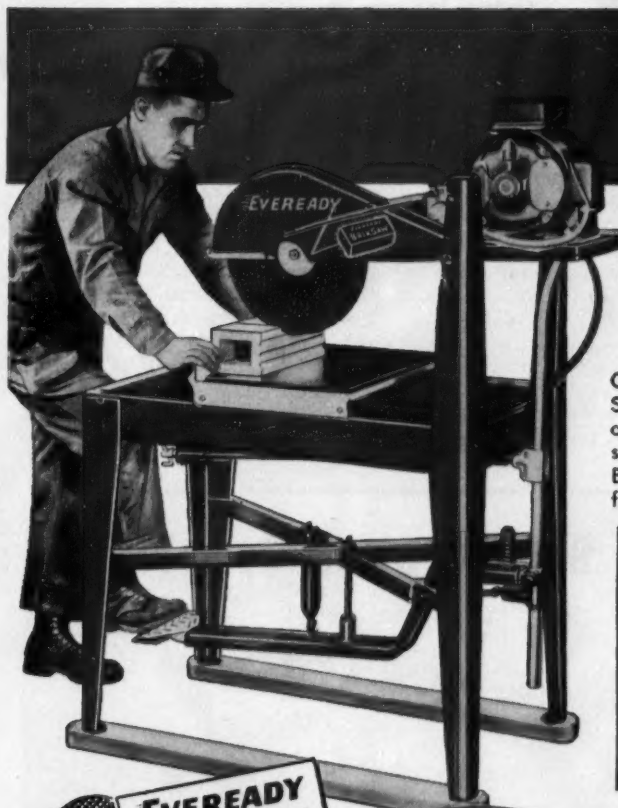
COLUMNS AND PANELS—106 capital columns with drop panels were easily shored with "Trouble Saver" Sectional Scaffolding on this warehouse construction job for L. S. Donaldson Co. in Minneapolis. Watson Construction Co. used four 6'6"-high frames with 20" extension legs and base plates on each column.



FOR GREATER SAFETY...EFFICIENCY...ECONOMY

THE PATENT SCAFFOLDING CO., INC.

38-21 12th St. Dept. CM&E, Long Island City 1, N. Y.
6931 Stanford Ave., Los Angeles 1, Calif.
Branches in all principal cities



**CUT ANY MASONRY MATERIAL FAST...
...AT LOWEST COST!**



Cutting WET (Dustless) or DRY, Eveready BrikSaw is the fastest, most efficient Masonry Saw on the market. The simplicity of BrikSaw's design plus the EXCLUSIVE labor-saving features, make BrikSaw the most profitable to operate masonry saw for any job.

EXCLUSIVE FEATURES



"Adjusta-Height" lets cutting head change elevation for materials of varying thickness... adjusts in 4 seconds.



Swing the cutting head to any desired position with this "Toe-Matic" foot treadle. Fast shift from one type of masonry material to another. In 21 seconds flat!



One-piece cutting head for immediate, easy portability. Off saw frame hardness or softness of material.



Automatic pressure control for the blade. Adjusts cutting pressure to hardness or softness of material.



Consistent, uniform quality — the blades you buy next month will give the same peak cutting performance as the blades you buy today. Available in both WET and DRY cutting specifications, to fit every Masonry and Hand Power Saw

YOUR EVEREADY DEALER CARRIES THE MOST COMPLETE LINE OF MASONRY AND CONCRETE CUTTING EQUIPMENT



For Masonry Saws and Hand Power Saws. Virtually unbreakable... recommended for difficult edge cuts... grooving... grinding cuts. Internally reinforced with NYLON "SAFETY-WEB". You can drop it, bend it, twist it.



**EVEREADY
POWR-DRIVE
CONCRETE SAW**

Takes the "Push-Pull out of Concrete Sawing—drives FORWARD AT CONTROLLED SPEED! "POWR-DRIVE" increases cutting footage with less operator effort—cuts at the lowest possible cost per lineal foot, whether used on small patching or trenching jobs or on continuous, full-scale joint cutting of highways, streets, airport runways.



FREE BOOK

FREE BOOK on Masonry cutting... requested by more than 18,000... will be sent without obligation... or ask your dealer.



NEW Continuous Rim For Masonry Saws cut two to three times faster than standard abrasive blades when used to cut hard, dense, vitreous materials such as Glazed Tile, Glass Block, Fire Brick, Marble, etc.



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Write for the Name of Your Nearest Dealer.

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**Don't buy
a pump ...
buy a
Marlow**

*sold and
serviced
throughout
the world!*

MARLOW PUMPS • RIDGEWOOD, NEW JERSEY
Div. of Bell & Gossett Company

TRACTO-LOADER . . . Continued from page 150

et levers, eliminating clutch slipping and shocks to machine and operator. The torque converter frequently makes it possible to load in higher speeds, too, shortening work cycles and increasing daily output.

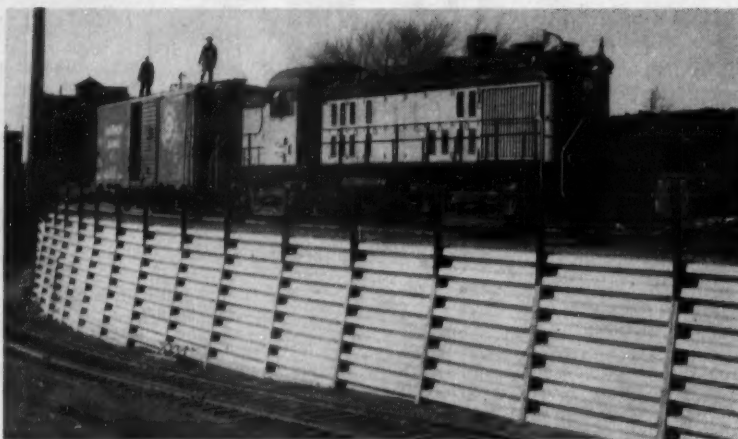
Ease of access to most parts and assemblies is another engineered feature for fast field adjustments and maintenance. Unit construction provides for the removal of engine, clutches, transmission and drive axles without disturbing adjacent parts.

For light excavating and all-around loading, the TL-12 Tracto-

Loader is a fast-stepping, easy-handling tool that should quickly pay off for many contractors who move dirt. A drawbar on the rear makes it a towing tractor, too.

Optional equipment extends the range of its usefulness. Available are: a 1½-yd bucket for light materials; bolt-on type bucket teeth; a lift fork; crane hook; and a back-filler blade that can be used for fine-grading. Special equipment is installed in place of the bucket on booms and dump links without disturbing hydraulic system fittings. Also available are a cab, a heater and special tire equipment.

Metal Bin Wall Shores Spur Track



METAL BIN WALL for a railroad spur cut down on construction time and also salvaged more than 1½ acres of storage space for a Wisconsin paper mill.

WALTER H. KNAPP, INC., railroad builders and consultants of Milwaukee, Wis., was awarded a contract to construct a feeder railroad spur to enter a second floor of the Wausau Paper Mills of Brokaw, Wis. Added to the original plans was another spur track into the building at ground level and immediately adjacent.

Use of an elevated spur would take up a good deal of yard space on the inside of the curves, but more important, the paper mill firm would be charged with the responsibility and expense of maintaining a trestle.

Consideration was given to a concrete wall and also to concrete cribbing, but this was eliminated because the soil had frost-boil characteristics that would require piling. It was finally decided to use

Armco metal bin wall because of its flexibility and high-strength qualities. Also entering into the decision to use this type of wall was the minimum clearance of only 8 ft 6 in. that had to be maintained between the feeder and elevated track. A high degree of curvature of 14 deg, required to bring the track into the building, further complicated the layout problem.

The final plan showed that the metal bin wall structure could be used for a distance of 290 ft leaving only 118 ft of trestle next to the new building.

According to the contractor, the metal bin wall and trestle were erected in 5 weeks, which represented a saving of one month in erection time. It was also estimated this type of construction salvaged 1½ acres of storage space.



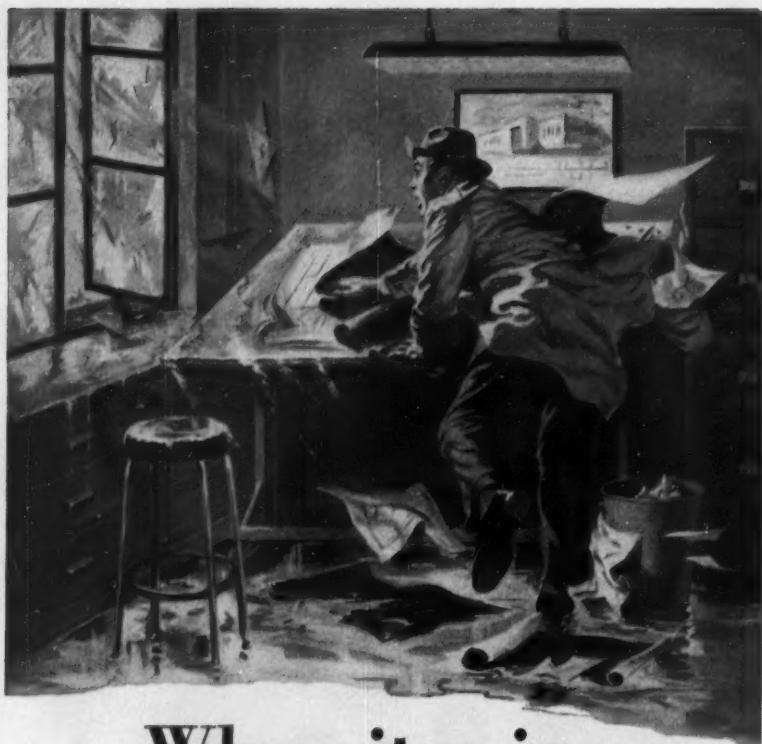
300,000,000 GALLONS OF WATER IN 15 DAYS—That's the record four dependable, trouble-free Marlow Self-Priming Centrifugal Pumps set when they dewatered the *world's largest natural drydock* at Grassy Point, New York. The contractor, Merritt-Chapman & Scott Corporation of New York City, barge-mounted the four 10" engine-driven Marlow Contractor's Pumps to speed the lake drainage job and finish the project *three days ahead of schedule!*

marlows are dependable!

Bidding on construction jobs is getting more and more competitive. That's why contractors make doubly sure cost and time estimates are right, to get the job and show a profit. When it comes to pumping, dependable Marlow Self-Priming Pumps never let them down . . . work goes through on schedule. For complete data on AGC rated pumps and Marlow "Mud Hogs," see your Marlow dealer or write for Bulletin C-52.

MARLOW PUMPS • RIDGEWOOD, NEW JERSEY

Division of BELL & GOSSETT COMPANY



When it rains, it sometimes pours destruction

(A true story based on Company File #118B6875)

We're architects — and when we locked our trim little office one evening we never expected it to look so different the next morning.

What a mess it was after that sudden thunderstorm! Broken windows. Water everywhere... on the floor... on the cabinets. Worst of all, on our drafting table.

We'd been working on a bank job, and were almost finished. Now every tracing was ruined! The cost of making new ones would have come out of our own pocket if we hadn't carried Valuable Papers Insurance. Our policy paid us back every cent it cost us to re-do the tracings.

Are you sure *your* drawings, blueprints, notes, books, maps or other valuable papers are completely safe from disaster?

Not only storm. But fire. Water. Even earthquake... explosion... riot... building collapse... damage by burglars, or sheer vandalism.

Nobody in the construction business should take this chance. Protect yourself against financial loss (even loss which occurs off your own premises) with adequate Valuable Papers Insurance.

Ask your Hartford Accident and Indemnity Company Agent or your insurance broker to give you full details about this essential, low-cost protection. You'll never regret it.

Year in and year out you'll do well with the

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On-the-Job Contractor-Labor Relations

by LEON B. KROMER, JR.

NLRB Revises Jurisdiction

IF YOU FILE an unfair labor practice complaint with the Regional Office of the National Labor Relations Board you may find the complaint thrown out under new rules recently adopted by NLRB. That happened in two cases recently when the Board's General Counsel dismissed two pending cases stating that under the Board's new standards for determining jurisdiction, the employers didn't meet the requirements.

To come within the Board's jurisdiction under the new yardsticks you must:

1. Furnish goods or services of \$200,000 or more a year to instrumentalities of interstate commerce, businesses engaged in interstate commerce, public utilities, etc. (The old floor used to be \$50,000);
2. Purchase from outside the state materials valued at \$500,000 or more.
3. Contribute \$100,000 or more in goods or services to national defense in accordance with a government contract or when goods and services furnished relate directly to national defense. Under the old rule the Board asserted jurisdiction over all cases involving companies doing any work affecting national defense.

There are advantages as well as disadvantages to you under the new rules. It will be more difficult to file a complaint if you operate solely within your home state. Your business has to meet the above stringent financial requirements otherwise the case will be dismissed. You may then be in a "no-man's land" as state courts or agencies dealing with labor relations often contend that they have no power to act. The Supreme Court has ruled that because NLRB has exclusive power to act over unfair labor practices affecting interstate commerce, state courts do not have any power to act, except in exercising the state's police powers—mass picketing, obstruction of
(Continued on page 159)

want high speed
plus endurance?
How's this...

1000 HOURS
at 3600 R.P.M.
UNDER FULL
LOAD!

If you were to drive 90,000 miles up an incline at 90 m.p.h., you would approximate the performance of the Model 24A, 331 cubic inch displacement Chrysler Industrial Engine pictured below.

To prove the power of Chrysler Industrial V8 Engines... their ability to run for long periods of time at high speed... on March 17, 1954 Chrysler engineers placed a production model Ind. 24A Engine on an endurance dynamometer at Chrysler Central Engineering Laboratories. Objective: 1000 hours operation at 3600 R.P.M. under full load.

During every one of the 1000 hours, the Chrysler Ind. 24A Engine delivered an average of 174 horsepower and when shut down, the engine was still in perfect operating condition.

During the run no service was necessary beyond minor maintenance care, such as oil changes and very infrequent spark plug changes and point adjustment. Yet, following disassembly of the engine, the only wear noted was negligible—no more than you might expect from an engine that has been operated for 1000 hours within a long period of time.

While there is every reason to believe that this is a record-breaking endurance run (and don't forget it was made at 3600 R.P.M. under full load), we are confident that every Chrysler Industrial V8 Engine will at least equal this astounding record.

This proves too, beyond a doubt, that the Chrysler Industrial V8 hemispherical combustion chamber design with its short-stroke, low-friction construction, makes an ideal power plant for any equipment that requires continuous high speed operation. Furthermore, in installing a Chrysler V8 Engine in preference to a diesel engine of similar horsepower, you can reduce your size estimate by one-half, your weight by two-thirds, and your cost factor by three-quarters!

For detailed information on the Model 24A or any Chrysler Industrial Engine, see a Chrysler Industrial Engine Dealer, or write: Dept. 98, Industrial Engine Division, Chrysler Corporation, Trenton, Michigan.

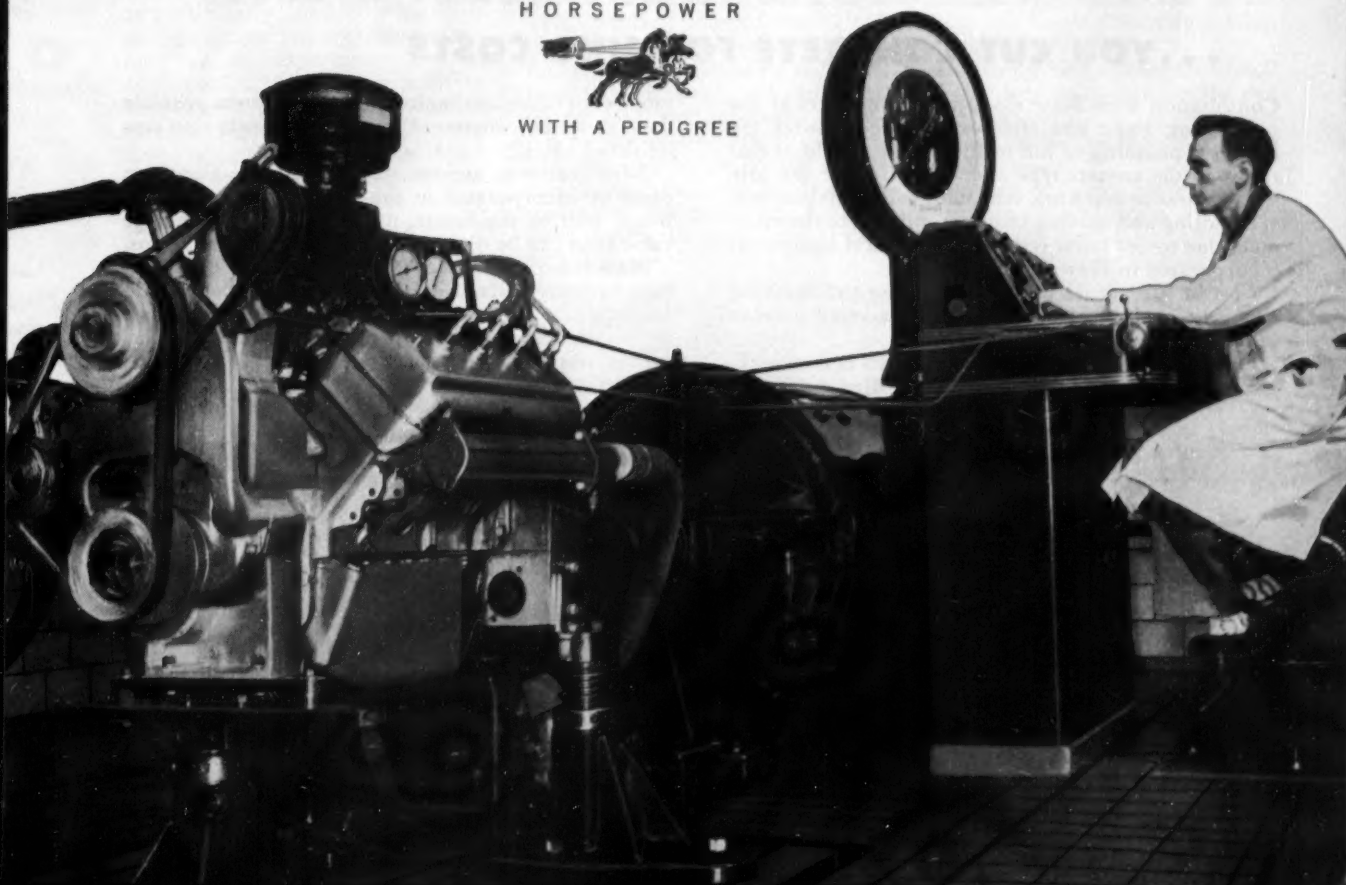
CHRYSLER Industrial Engines

INDUSTRIAL ENGINE DIVISION • CHRYSLER CORPORATION

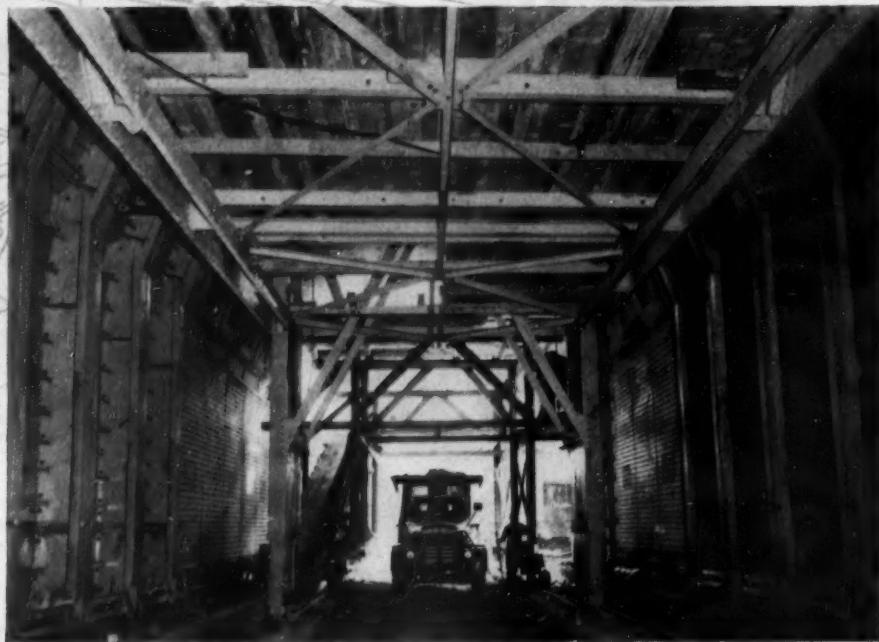
HORSEPOWER



WITH A PEDIGREE



....WHEN **BLAW-KNOX** FIGURES
AND FITS STEEL FORMS
FOR YOUR JOB ...



Blaw-Knox Telescopic Forms and Traveler for combined sidewall and arch pour of WEST VIRGINIA TURNPIKE tunnel, 28' 7" wide x 26' 0" high. This vehicular tunnel will be 2664 feet long and will be

lined with 30,000 yards of concrete. As the inside surface will be faced with white tile, sidewalls are scarified for stronger tile bond by means of scoring wires welded to sidewall portion of forms.

...YOU CUT CONCRETE FORMING COSTS

Consultation with Blaw-Knox form engineers at the prebidding stage and after-award stage assures the intensive planning of job methods and schedules that result in the correct type and quantities for the job, with assurance that work schedules will be maintained.

Handling and moving costs are reduced to the minimum due to the latest types of mechanical equipment incorporated in Blaw-Knox design.

Cost of placing tierods, and plugging and finishing tierod holes, is reduced because of the small number of tierods used.

Collapsing and stripping of the forms is a smooth, graduated operation, usually controlled by jacks,

ratchets or other mechanical means to prevent possible damage to the concrete. Use of large panels also cuts finishing costs.

Adjustments to various sizes or cross-sections can often be incorporated in the design to permit additional uses of the forms, permitting greater salvage value than can be obtained from other types of forms.

Blaw-Knox experience in designing Steel Forms results in many perfected details, such as lap joints, slip joints, grout pipe connections, special assembly pins, screw latches, door details, hinged apron, and many others impossible to duplicate in wood forms or lighter steel forms.

PLAN YOUR JOBS WITH BLAW-KNOX STEEL FORMS and take full advantage of the Blaw-Knox Consultation Service for recommendations and proposals for the most economical and most efficient forming methods and equipment.

BLAW-KNOX COMPANY
BLAW-KNOX EQUIPMENT DIVISION
PITTSBURGH 38, PA.
Offices in Principal Cities



WRITE FOR BULLETIN 2430 ...
It contains special design suggestions and complete details about Blaw-Knox Steel Forms and the consultation service that is available to any contractor without obligation.

STEEL FORMS
CONSULTATION SERVICE BY BLAW-KNOX



LABOR . . . Continued from page 156

streets and highways, etc. On the other hand, you may be relieved of many charges of unfair labor practice complaints filed against you. Contractors have been continually faced with discriminatory hiring and firing charges even though NLRB has been unable to devise machinery to conduct representation elections to determine the appropriate unit or units for employees. (CM&E Feb. pp. 132, 135; June pp. 166, 168.)

Furnishing Payroll Data

If, during bargaining sessions, the union representatives ask for names of individual employees of the trade and their wage rates, you must furnish such data according to a recent National Labor Relations Board decision. The decision is based upon the doctrine that since the union represents employees it is entitled to wage information for intelligent bargaining, which information can only be furnished by the employer. It is the employer's duty, says the Board, to accommodate the union. However, if the information is desired by the union solely to harass the employer, wage data need not be furnished.

How does this affect contractors? If you are paying above the scale to particularly qualified men, such as foreman or top operating engineer on an expensive piece of equipment, and the union suspects that you are, you will have to furnish the information to the union negotiating committee if requested during bargaining. If you have non-union employees in the same trade, their rates would also have to be shown. While paying over the agreed-upon rate to highly skilled men can be amply justified as good business sense, it frequently provides the union with arguments to pressure for higher rates for other employees.

Wages on Federal Work

Be sure that you pay at least the minimum wage rates to laborers and mechanics as set forth in the contract when performing work on federally financed projects. The Davis-Bacon Act requires that the Secretary of Labor predetermine prevailing rates for laborers and mechanics to be employed by contractors (prime and subs) on the job. These rates become the minimum rates. You are not prohibited

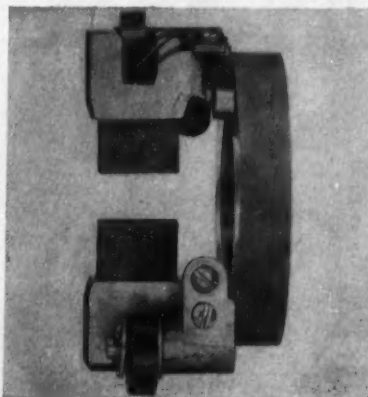
(Continued on page 162)



BETTER COMMUTATION results from increased brush tension on VIBER'S new brush holder assembly. The strong adjustable flat spiral spring keeps brush tension at the 36 ounce factory setting, or more. You can easily adjust brush tension with only a screwdriver, after removing cover.

80% more brush tension extends Viber brush and commutator life

You will get better brush and commutator life and performance from the 36 ounce adjustable brush tension and $\frac{3}{8}$ inch ground clearance of VIBER'S new brush holder assembly. A larger ($1\frac{1}{8}$ inch o.d.) shielded bearing will give you increased bearing life and further reduce maintenance and down time. In addition, you can extend the savings from this improved construction to your present VIBER vibrators. The new assembly fits VIBER motors manufactured back to 1942. With the convenient conversion kit you can make the change easily right in your own shop.



WIDE BRUSH CLEARANCE from frame side of $\frac{3}{8}$ inch phenolic ring minimizes carbon dust accumulation and any tendency to arc to ground.

- **Brush holder** — Machined bronze casting, with strong, adjustable flat spiral spring. It accurately positions the brush, lets it move freely, and maintains full tension. This reduces arcing and burning, increasing brush and commutator life.

- **Insulating ring** — strong laminated phenolic ring firmly supports the two brush holders. Its $\frac{3}{8}$ inch thickness provides extra clearance to prevent arcing to ground.

- **Bearing** — Twenty percent larger, with twice the load rating. This bearing and the beefed up aluminum casting supporting the brush holder assembly have ample mechanical strength to resist misalignment from rough handling in the field.

- **Conversion kit** — For better commutation and lower maintenance on your present VIBER Vibrators. Excepting only the laboratory Model 11, you can use the new assembly on all VIBER motors made since 1942 — Models E, SE, 26, 27, 28, and 31.

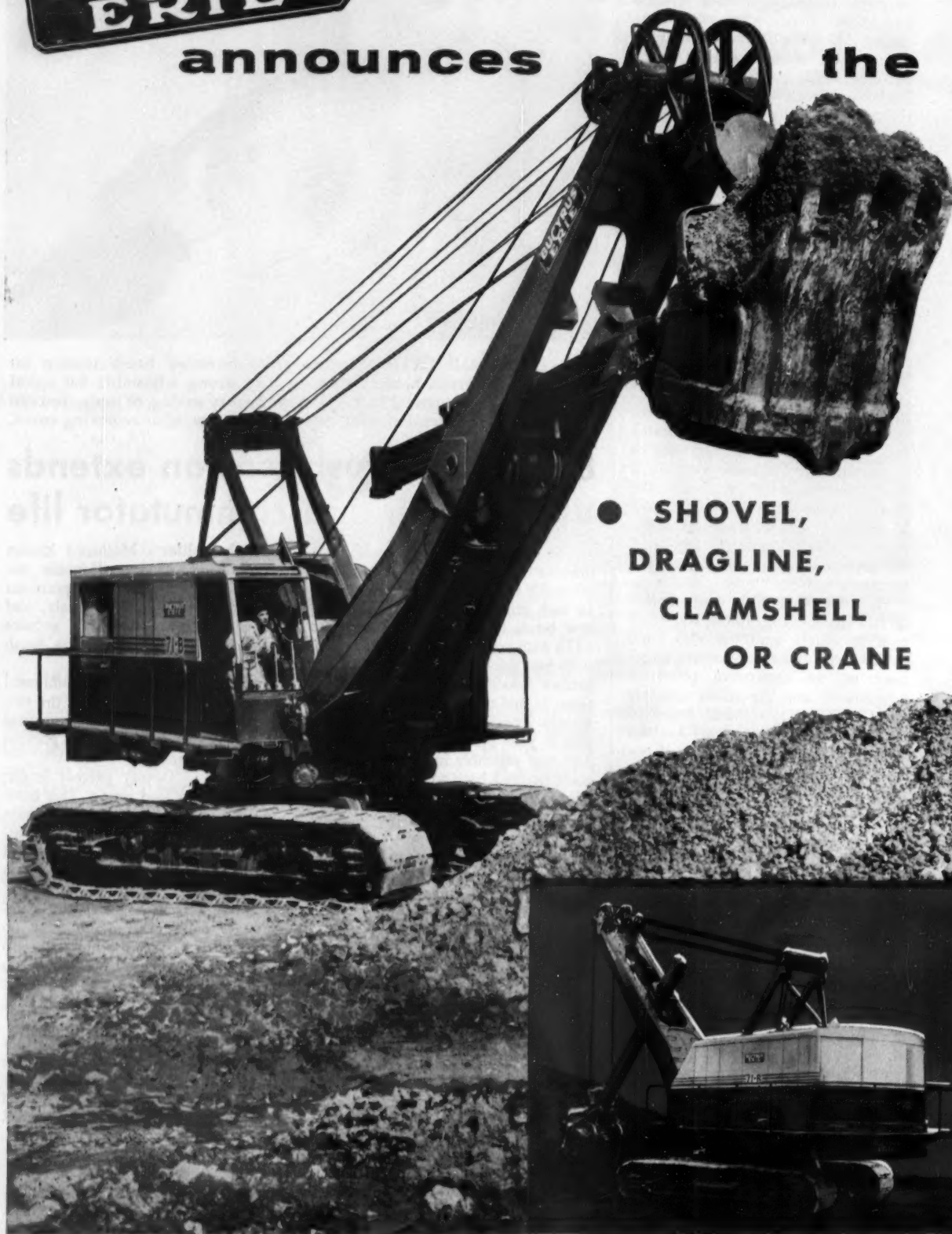
For further information on the new brush holder or any of the complete VIBER line of external and rubber tipped internal vibrators, contact your authorized distributor or VIBER COMPANY, 726 South Flower St., Burbank, Calif. Dept. 68.



CONCRETE VIBRATORS SINCE 1931

**BUCYRUS
ERIE**

announces the



● **SHOVEL,
DRAGLINE,
CLAMSHELL
OR CRANE**



71-B

new 3-yd

To meet the demand for a convertible 3-yd. excavator of high-speed, high-output performance, Bucyrus-Erie has developed the new 71-B. Designed from the ground up as a completely new machine, it has outstanding features that have been field-proved on other Bucyrus-Eries through thousands of machine-years of service.

- POSITIVE TWIN-ROPE CROWD
- RECTANGULAR INSIDE DIPPER HANDLE
- STRONG LIGHT BOOM
- FULLY INDEPENDENT BOOM HOIST
- CHOICE OF FOUR A-FRAMES
- ALL-PURPOSE HEAVY DUTY DIPPER
- FULL AIR CONTROL (not just air assist) except for drum brakes and swing and propel clutches.
- TORQUE CONVERTER DRIVE (also available without torque converter)
- ONE-PIECE CAST STEEL REVOLVING FRAME
- 12 CONICAL HOOK ROLLERS
- DOUBLE FLANGE ROLLER PATH
- ROTABLE SWING RACK GEAR
- FOUR OPTIONAL CRAWLER MOUNTINGS
- FRICTION STEERING CLUTCHES AND DIGGING BRAKES spring set and air released.

These and other features give the new 71-B a balanced and rapid work cycle for continuous high output, along with the durability for sustained operation and long life. For more information on this outstanding new excavator see your nearby distributor.

65E34C

BUCYRUS-ERIE COMPANY

SOUTH MILWAUKEE
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**BUCYRUS
ERIE**



INDIVIDUAL DESIGN . . . for each model in the line

¾- to 4-cu. yd. gasoline, diesel, and single-motor electric . . .

Shovels, Draglines, Cranes, Clamshells, Dragshovels.



STANDARD STEEL "S-J" for PATCHING—PRIME COAT—SEALING— SHOULDER REPAIR and CRACK FILLING

Built to The Highest
Standard

Compare These Special "S-J" Features:

- 1 SUCKS BACK surplus material into tank after spraybar is closed. Less drip! Means clean bar for next job!
- 2 PIPING and PUMP are automatically drained after finishing a job! This prevents "freezing" or slow start on heavy materials!
- 3 ALL OPERATIONS easily controlled by one operator riding the unit!
- 4 GRAVITY DRAW OFF ON CURB SIDE—means greater safety for operator!
- 5 ALL PARTS Readily Accessible for easy repair. Entire piping system can be taken down by unbolting only two circle flanges!

OTHER STANDARD STEEL PRODUCTS

Asphalt Pressure Distributors, Tar Kettles, Patch Rollers, Supply Tanks, Tool Heaters, Asphalt Tools, Street Flushers, Construction Brooms and Aggregate Spreaders.

SAVES TIME and LABOR HANDLES ALL TYPES OF BITUMINOUS MATERIAL

★ For year round use—Standard Steel "S-J" Maintenance Distributor can be used either for emergency or secondary construction work.

The most adaptable piece of road equipment you can buy, the "S-J" performs many duties of heavier machines — such as building drives, alleys, playgrounds, parking areas, shoulders, reshaping curves as well as patching and sealing. Quick to start and get going, fast on the job, the low cost of this equipment will be paid for in reduced construction and maintenance cost in a single season. Get the facts and cost on the "S-J" before you invest in any similar equipment.

WRITE FOR NEW
Catalog "S-J"

SJS

Standard Steel Works, NORTH KANSAS CITY, MO.

YOU'LL SAVE TIME AND EQUIPMENT with a



GXTT!

MODEL GXTT—14 THRU 22-TON CAPACITIES . . . Geosnek type tilting platform cargo carrier equipped with two double-acting hydraulic cylinders cushion trailer platform when tilted, with or without load. Saves time—saves equipment—one-man operation. Exclusive "TRANSPORT" tandem axle assembly gives both lengthwise and cross-wise oscillation.

WRITE FOR COMPLETE
INFORMATION



CEDAR RAPIDS IOWA, U.S.A.

LABOR . . . Continued from page 156

from paying higher rates but don't pay less.

The Department of Labor has stepped up enforcement of the law and as a result has blacklisted 20 firms who, for three years, cannot bid on work financed either in whole or in part from federal funds.

While the vigorous enforcement program is intended, according to Labor Secretary Mitchell, to protect workers on federal projects from "chiseling employers," you might get in trouble if, through error in wage payments or misclassification of trades, you pay a rate lower than that specified.

Keep Your Jobs Safe

THE MEMPHIS CHAPTER of the Associated General Contractors sends an informative weekly newsletter to each member. In addition to reporting on construction opportunities, the bulletin recently has been featuring practical safety suggestions under the heading, "Always Keep Your Jobs Safe." Here are typical points.

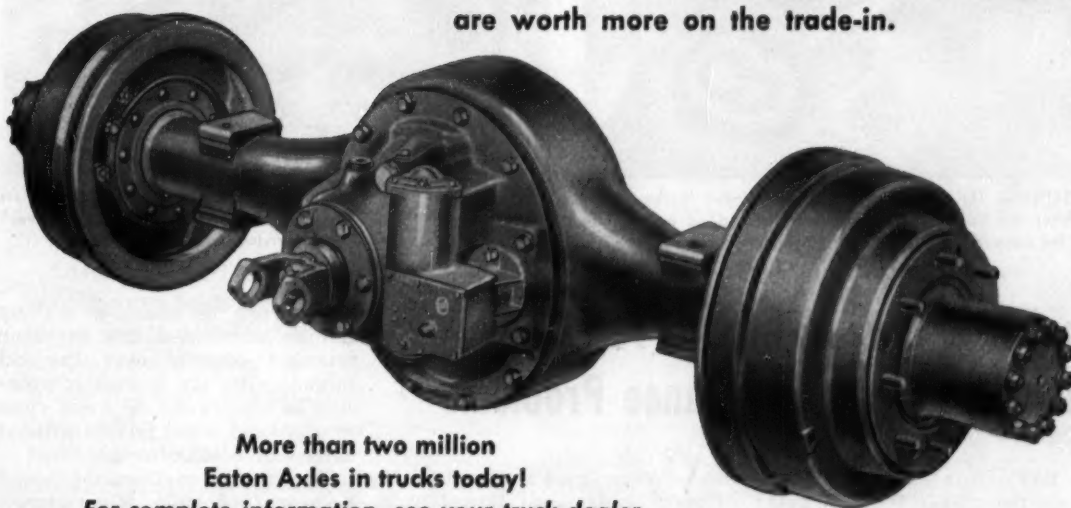
• **For masonry work:** Basement walls should be braced sufficiently to withstand any load which may be placed upon them during construction. Backfilling should not be done against green walls. Supports which will cause vibration should not be placed on walls until they have set properly. Power saws used for cutting brick or stone should be equipped with dust collectors. Men using these saws should wear goggles—and respirators, if dust collectors are not used.

• **On operating power saws:** Keep saw table and work area clean and clear of small crop ends which trip men. Use guards furnished by manufacturer and see that operators have and use proper eye protection. Use proper blade types, keep them sharp and set properly. Provide kickback aprons for operators, see that they use a "pusher" when ripping short stock, and instruct them to stop saw as soon as work is finished. Swing cut-off saw should have the upper half of the saw covered completely. A device should be provided to return the saw automatically to the back of the table when released and a limiting chain used to prevent saw from swinging beyond the front edge of the table.

Eaton 2-Speed Axles

SAVE MONEY MAKE MONEY for Truck Operators

Eaton 2-Speed Axle trucks make more and quicker full-load trips—operating cost is lower, upkeep is less. Trucks last longer, earn more, are worth more on the trade-in.



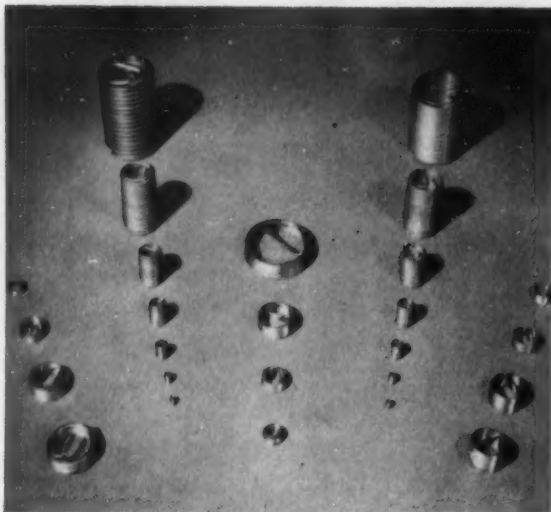
More than two million
Eaton Axles in trucks today!
For complete information, see your truck dealer.

EATON

AXLE DIVISION
MANUFACTURING COMPANY
CLEVELAND, OHIO



PRODUCTS: Sodium Cooled, Poppet, and Free Valves • Tappets • Hydraulic Valve Lifters • Valve Seat Inserts • Jet Engine Parts • Rotor Pumps • Motor Truck Axles • Permanent Mold Gray Iron Castings • Heater-Defroster Units • Snap Rings • Springlites • Spring Washers • Cold Drawn Steel • Stampings • Leaf and Coil Springs • Dynamatic Drives, Brakes, Dynamometers



HELI-COIL screw thread repair inserts, coils of diamond-shaped stainless steel wire are available in an assortment of sizes from 4.40 to 1½-12 covering 90% of automotive thread sizes.



USUALLY the hole produced by worn or stripped threads is the same diameter as the drill size to take the tap for the insert. In this case, the hole is retapped directly over the old threads.



AN INSERTING TOOL is used to install the insert in the tapped hole. After this operation is completed, the tapped hole will be exactly the same diameter as the original tapped hole.



THE INSERT in place in the tapped hole. Flexibility of the stainless steel wire permits the load to be equally distributed over each thread, so it has good load carrying qualities.

Simplified Thread Repair Technique Cuts Down on Maintenance Problems

ANY REPAIR a contractor can make on-the-spot in the field, cuts downtime, eliminates movement of heavy equipment and requires fewer men to make the repair. Worn or stripped threads of cast iron parts can now be made in the field quickly and simply with hand tools by one man with a new thread repair technique using Heli-Coil screw thread inserts.

The key to this thread repair technique is a helically wound coil of diamond-shaped stainless steel

wire. When used to replace a stripped or damaged thread in a tapped hole, the insert forms a female thread the same size, but stronger and more wear resistant than the original thread. The insert requires no more wall thickness than a conventional tapped hole.

The procedure for repair of worn or stripped threads is quite simple. Usually the hole produced by damaged threads is the same diameter as the drill size specified to take

the tap for the insert, so drilling can be eliminated and the hole retapped directly over the old threads. The tap is slightly over-size, so repairs can be made close to edges and water jackets without danger of break-through.

The insert strengthens the thread because it is flexible. When a screw is tightened into it, the insert adjusts itself until all threads are carrying an equal share of the load. The insert is hard and smooth and gives good wear resistance. The inserts range in size from 4.40 to 1½-12.

The same system has been in use for several years by new equipment manufacturers to make threads in aluminum, magnesium, wood, or plastic parts.



"Phillips 66 Products do a job for us"

So says Henry G. Korsmo, Manager of Mechanical and Transportation Departments of Transcon Lines in Oklahoma City, Oklahoma.

Operating 80 Diesel tractors and 173 trailers, Transcon hauls general freight on routes across the Middle West to California. Here are typical examples of the tight schedules on which Transcon operates: Oklahoma City to Los Angeles in 45 hours; Chicago to Oklahoma City in 25½ hours. And Transcon schedules are rigidly maintained.

Transcon has put full confidence in Phillips 66 Products since 1946. Today, they are using Phillips 66 Heavy Duty Motor Oils, Greases and Diesel Fuel. "Phillips 66 Products do a job for us. Take a look at our engines at overhaul. They are remarkably clean. We get little sludge or wear."

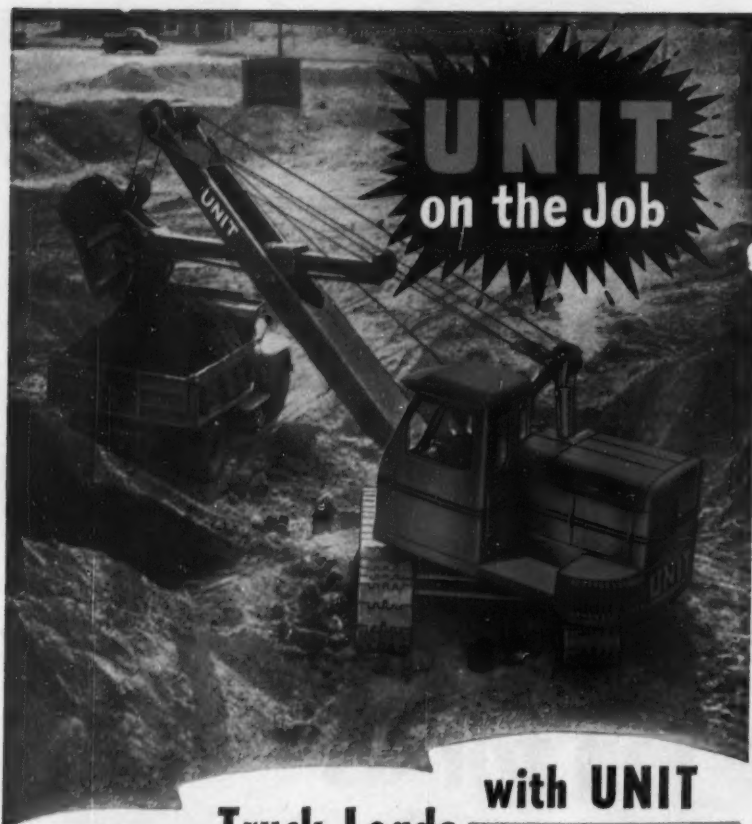
Phillips is proud of the part its products play in keeping Transcon "on schedule". Why not learn what Phillips 66 Products can do for you? They can help you, no matter what kind of fleet you operate.

Set up your own test. A Phillips 66 Lubrication Engineer will be glad to help you plan it without obligation. Write to: Sales Department, Phillips Petroleum Company, Bartlesville, Oklahoma.

Oil for the Engines of Commerce



PHILLIPS 66 HEAVY DUTY MOTOR OIL



Step-up Truck Loads with UNIT

Here's a UNIT $\frac{3}{4}$ yard Shovel that's "in there swinging" . . . making big payloads. UNIT'S balanced stability and power permit hard digging . . . produce maximum yardage at low operating cost. Fewer working parts cut down replacements required . . . reduce maintenance costs. The FULL VISION CAB enables operator to see in ALL directions . . . promotes safety . . . increases efficiency. Results in more loads per day and easier load handling. Get the complete UNIT story. Write for literature.

UNIT CRANE & SHOVEL CORPORATION.

6305 WEST BURNHAM STREET

MILWAUKEE 14, WISCONSIN, U. S. A.



$\frac{1}{2}$ or $\frac{3}{4}$ YARD EXCAVATORS... CRANES UP TO 20 TONS CAPACITY
CRAWLER OR MOBILE MODELS . . . GASOLINE OR DIESEL



All Models Convertible to ALL Attachments!

SALES AND ★ SERVICE ★

News of manufacturers' activities designed to assist the reader in the purchase of machinery, equipment and materials and help him obtain quick service on parts and maintenance.

Distributor Appointments

Bucyrus-Erie Co.: Sim Grady Machinery Co., Macon, Ga. has been appointed distributor to handle the full Bucyrus-Erie line of $\frac{3}{4}$ - to 4-yd convertible excavators and cranes, serving 81 counties—including Muscogee, Marion, Taylor, Crawford, Bibb, Twiggs, Wilkinson, Johnson, Emanuel, Jenkins and Screven. The rest of the area will continue to be served by R. S. Armstrong & Bros. Co., 676 Marietta St., N.W., Atlanta, Ga.

Clark Equipment Co.: Announces appointment of Highway Machinery & Supply Co., Inc., Richmond, Va. to sell and service fork-lift trucks, straddle carriers and other materials handling equipment manufactured by the Industrial Truck Division of Clark Equipment Co. in the entire state of Virginia.

On the Sales Front

Black & Decker Mfg. Co.: Announces election of R. G. Horner as vice president-sales planning, Adam Quick, as vice-president-production and J. F. Spaulding, vice-president-general sales manager.

Bucyrus-Erie Co.: George L. Read, Toronto, Ont. has been appointed Canadian sales manager in charge of sales of all Bucyrus-Erie products except water and oil well drills in all Provinces of Canada east of and including Saskatchewan.

United States Rubber Co.: Walter F. Brown, has been promoted to assistant sales manager for U.S. Tires Div. of United States Rubber Co., making his headquarters in the New York general offices. Succeeding Mr. Brown as north-central division manager is J. A. Napier of Pittsburgh. J. S. Baker, assistant district manager at Pittsburgh, moves up to district manager and W. L. Anderson becomes the new district manager at Omaha.

Superior Scaffold Co.: Announces appointment of Larry Pilj as Field Sales Manager to represent Superior Scaffold's established line of Jiffy Jacks, Featheredges, Flat Backs, Shack Jacks and other products and help spearhead the campaign to introduce the new superior auto-lock steel scaffold.

(Continued on page 168)



HOW TO SAVE 50% ON STREET WORK

Athey HiLoader Cuts Costs for Los Angeles Contractor

Contracts for repaving of existing black-top streets in a new subdivision called for the removal of old surfacing and excess dirt. J. E. Haddock Co., Ltd., Los Angeles, contractors on the project, considered many loading methods and picked an Athey 125 HiLoader for the job.

The material to be loaded ranged from ½" to 8" in size and included trash, debris and chunks of old paving. The HiLoader's full-floating paddle-blade feeder pushed 8 cubic yards a minute onto the tough conveyor belt. The swiveling discharge conveyor, angled 20° to the left,

fed the material to 8 and 12-yard trucks moving along with the loader.

Neal Saul, of the Haddock company, reports: "The HiLoader picks up all the material, leaving the sub-grade undisturbed and clean for paving. We saved many man hours of labor and eliminated refinishing of sub-grade!" *Costs were cut as much as 50%.*

Your Athey-Caterpillar Dealer can show you how a 125 HiLoader can save you money on any loading operation. Just give him a call or write direct.

- Rocks, roots and debris were handled without damage by the full-floating feeder. The swiveling conveyor eliminated lengthy truck maneuvers and HiLoader and truck speeds matched exactly.



**PRODUCTS
CORPORATION**

5631 West 65th Street • Chicago 38, Illinois



only the new

MARVEL

**ADJUSTABLE SHORE
HAS THE
COMPLETELY ENCLOSED
ADJUSTING SCREW!**

- 1** Completely enclosed Adjusting Screw, protected from sand, grit and concrete at ALL TIMES for smoother action . . . completely protected from weather to prevent rust and corrosion . . . protected from damage in transit and storage.
- 2** One piece straight Adjusting Bar and Locking Pin provides for faster turning . . . with no time wasted raising and lowering levers.
- 3** Inner Tube and Outer Tube made of High Grade Steel for utmost strength at minimum weight.
- 4** No projections anywhere . . . streamlined for greater safety to workmen and to shorten expensive Setting-up and Taking-down time.

It will pay every contractor to replace out-moded shoring equipment with the New MARVEL Adjustable Prop with "Premium Performance" because only the New MARVEL has the Completely Enclosed Adjusting Screw built for Life Time Service.

Order Now . . . while prompt deliveries are available.

Available in three sizes . . . Maximum Adjustment to 15 feet.

PRICES UPON REQUEST

MARVEL EQUIPMENT COMPANY

1055

Bowen St.

OSHKOSH, WIS.

Phone 512-2400

BUILDERS OF ADJUSTABLE SCAFFOLDS SINCE 1939

SALES AND SERVICE . . .

Continued from page 166

Marlow Pumps: A. F. Woods has been appointed sales manager. He has been a district engineer covering Michigan, Ohio and western Pennsylvania and part of Kentucky and Canada, and his primary job will be to help and cooperate with these local dealers.

Gar Wood Industries: E. B. Hill, vice-president, has been appointed Director of Sales, Advertising and Export for all corporation products.

Hercules Powder Co.: J. Henry Schindler, Jr. is the new manager of export sales of explosives with headquarters in the New York office.

Hyster Co.: Wilton G. Smith has been appointed to the position of manager of the New York export office at 90 West St.

Taylor Forge & Pipe Works: Appointed George Saum as manager and T. E. Marston, general sales manager of Taylor Forge Aircraft Products Div.

Gardner-Denver Co.: George W. Gutenkunst, formerly district manager in Los Angeles, has been transferred to the executive offices in Quincy, Ill. to be general sales manager.

ARMCO Drainage & Metal Products, Inc.: Three new management appointments have been announced, as follows: Max H. Bailey, division sales engineer of the Calco Div. of Armco Drainage, with headquarters at Berkeley, Calif.; O. M. Carter, state sales manager for Mississippi and Arkansas with headquarters at Memphis, Tenn.; Crosby W. Beam will succeed Carter as division sales engineer for the Southwestern Division.

In the Main Office

The Lincoln Electric Co.: William Irrgang was elected president and general manager; James F. Lincoln was elected chairman of the board and John C. Lincoln, founder of the company was elected honorary chairman of the board and treasurer.

Bay City Shovels, Inc.: Announces election of Donald E. Hawkins to office of president.

Special Mention

Fairbanks, Morse & Co.: Marked a special milestone in the 124 yr history of its company recently by opening a new manufacturing plant and foundry in Kansas City, Kan. The plant occupies 180,000 sq ft and will produce enough pumps each year to move 35 billion gal of water per day.



ROCK RATED

to better your best production!

Pit a P&H 1055 against any comparable 3½ yd. machine and see how P&H takes over the production lead. And it *maintains* the pace day after day, under the toughest digging and loading conditions!

P&H years-ahead design and construction make the big difference. You get the extra strength of high-tensile alloy steels to withstand the pounding of repeated shock loads . . . the solid stability that lets you exert more power at tooth point. And only P&H has *Magnetorque* to swing you through five loads to the other man's four. It's the most dependable swing ever built — lasts the life of the machine!

Want the same outstanding features in a 2½ yd. machine? Ask us about the companion Model 955A.

with **P&H** **MAGNETORQUE***
ELECTRIC SWING

- 15-25% faster
- 100% free of friction and wear!

*T.M. of Harnischfeger Corporation
for electro-magnetic type coupling.

P&H LARGE EXCAVATOR DIVISION
HARNISCHFEGER
CORPORATION
MILWAUKEE 46, WISCONSIN

the **P&H** Line



TRUCK CRANES



DIESEL ENGINES



POWER SHOVELS



MOTORIZED ROLLERS



ELECTRIC HOISTS - SOIL STABILIZERS



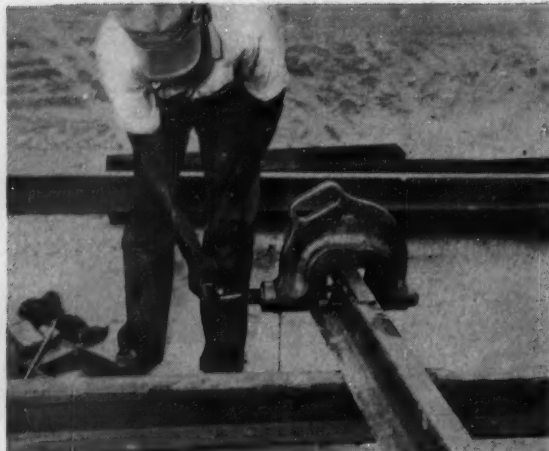
WELDING EQUIPMENT



OVERHEAD CRANES



1 ONE MAN POSITIONS the rail punch, such as operator is doing here by placing the device over the rail at the desired location of the hole. The entire operation requires only 2½ min.



2 AFTER THE PUNCH is positioned, it is clamped to the rail by tightening the die-retaining bolt. The operator then inserts a cartridge in the breech ready for firing.



3 WITH SEPARATE FIRING HAMMER, the operator discharges the cartridge. The gas pressure generated activates a piston which forces punch through the rail web to make desired hole.



4 THE FINISHED HOLE is clean, round and requires no filing or reaming. The gentleman seated is holding the metal slug which came from the punched-out section.

Punches Rail Holes in 2½ Minutes

FOUR TIMES FASTER than other methods—this sums up the Velocity-Power Rail Punch, a cartridge-actuated punch for making holes in rail web. It's manufactured by Mine Safety Appliances Company, Pittsburgh, Pa.

Tests in the field proved that to position the rail punch, insert blank cartridge, fire and remove the slug opposite the piston, requires 2½ min.

The self-contained portable punches are readily moved along a rail, as the job progresses. One man with little previous experience can position, load and fire the 70-lb punch successfully.

Interchangeable pistons punch units and the dies permit use of the rail punch for making precisely sized holes in any of a desired range of diameters. Three models are available for use with rail of various weights from 40 to 110 lb.

To operate the punch, the piston and punch unit are assembled in the punch frame, and the complete tool is placed over the rail head at the desired location. For correct vertical alignment, a spacing plate or templet may be inserted between the rail head and the punch frame. The receiving die then is placed in position, and the punch is clamped to the rail by

tightening of the die-retaining bolt.

A small blank cartridge next is inserted, and the operator simply taps the firing pin with a separate hammer to discharge it. Gas pressure generated by the cartridge discharge drives the piston forward which, in turn, pushes the punch unit through the rail web, leaving a clean, smooth hole, requiring no reaming or filing, with little taper. The metal slug produced by the piston-driven punch is stopped and contained on the leaving side of the rail web by the replaceable locked-in die that opposes the firing unit.



SPEEDI-SERVICE IS... FREE!

You pay no more for high-quality Yellow Strand on the Speedi-Service Plan! This plan is a free service of your Yellow Strand distributor. He has invested time and money to insure the efficient, accurate administration of your Speedi-Service Plan.

Speedi-Service is a plan to register your wire rope needs. This eliminates costly record keeping and assures an ample

stock of any rope you need at all times. You just call your Yellow Strand distributor and he takes care of all the details and work.

The Speedi-Service Plan can be explained fully by your distributor's wire rope specialists. Write for his name and address and for a free folder describing Broderick & Bascom's Yellow Strand Speedi-Service Plan.



A SHORT STORY...

Time: 10:00 A.M. A hoist line on a dragline shows that it's time for replacement. The superintendent of the operation calls his Yellow Strand distributor.

Time: 10:05 A.M. The wire rope man at the distributor has taken the call and all the facts he needs — which machine and which line.

Time: 10:10 A.M. Exact specifications of the line that's needed is taken from Speedi-Service records of your machinery maintained by your distributor.

Time: 10:20 A.M. The rope is taken from stock, measured, cut and coiled. It's ready for your pick-up or delivery by the fastest way.

In twenty minutes, your order is written, filled, ready for delivery. Your machine is down only as long as it takes you to get to your nearby distributor. That's Speedi-Service!

Yellow Strand SPEEDI-SERVICE

**BRODERICK & BASCOM
ROPE CO.**

4203 Union Blvd.

St. Louis 15, Mo.

AMPLIFIED

IN A...

● 13 TON OWEN

The stresses and strains to which especially large machines are subjected are more than proportionally greater than machines of conventional size. Proper designing challenges the knowledge and skill of the engineer.

An interesting example of skillful designing and sound construction is this 3 Cu. Yd. Owen Bucket built to handle dredging of large blasted rock.

In general design and principle of operation it is typically Owen. But it has two main shafts to cover an unusually large area when open, teeth almost as large as a man and increased power sufficient to fully utilize its tremendous capacity.

If you have an uncommon need you can depend upon Owen to build a special bucket that will render the same satisfactory service you have long enjoyed from standard Owen Buckets.



THE OWEN BUCKET CO.

6020 Breakwater Ave., Cleveland 2, Ohio

BRANCHES: NEW YORK, NEWARK, PHILADELPHIA, PITTSBURGH, RICHMOND, ST. LOUIS, TAMPA, WASHINGTON, D.C.

Safe Tunneling Wins Award

A PERFECT SAFETY RECORD was chalked up by Cabot Construction Co. in driving 2,000 ft of flat-arch tunnel (8 ft high and 11 ft wide) through hard, horizontally bedded limestone at Niagara Falls. It wasn't easy, for the ground was laced by seams carrying water and hydrogen sulfide gas. But gas detectors and plenty of air (5,000 cfm) at each heading, plus extensive grouting ahead, kept the job 100% safe.

This fine record has earned Cabot the Liberty Mutual Insurance Co. safety award. In presenting the plaque to Walter Dunkam, president of the Kingston (N.Y.) construction outfit, Liberty Mutual's assistant chief engineer Arthur Gordon stressed not only the difficult underground conditions, but also the fact that tunneling was completed in little more than five months.

The tunnel was attacked from four headings turned from two down-shafts sunk through 15 ft of dirt and 30 ft of rock cover over the arch. Two raises were cut upward into an intake-outlet structure in a river cofferdam and to a pump house in a hand-sheathed pit.

The tunnel was driven full face in 8-ft advances. Two jack-legs handled the drilling, and the round (which included a burn cut) was blasted with 40% gelatin. An Eimco 21 loaded muck into 1-yd cars on 24-in.-gage track for haulage to the shaft and disposal was by crane-handled scale pans. Average advance was 100 ft per week per heading, on a three-shift basis.

Centerline Dividing Wall Poured With Lining

A concrete dividing wall (separating intake and outlet waterways) was poured along tunnel centerline monolithically with the lining. For this, a 160 Pumpcrete delivered the mix to 40-ft telescopic forms.

Cabot Construction Co. drove the tunnel for Electro Metallurgical Co. under a subcontract from the Foundation Co., New York City. For Cabot, John H. Foster and Henry Holloway were superintendents on tunnel excavation and concreting, respectively. Dick Johnson was job manager for the Foundation Co., and Arthur Weisaupt was general superintendent.

*Reports
from
Users*

TEXAS ALUMINUM PLANT

"We compacted 380,000 cu. yds. of clay fill to 95% with twenty Rammers in six months. No other equipment would produce required compaction and only the Barco Rammer permitted us to finish the job on schedule."—*Consolidated Western Steel Division, Port Lavaca, Texas.*

CALIFORNIA PROJECT

"We had an occasion to compare the Rammer along with two other machines and it was surprising how much more material the Barco Rammer would handle."—*Westway Excavating Co., West Los Angeles, Calif.*

MIDWEST WATER LINE

"The Barco Portable Gasoline Rammer has fulfilled our expectations 100%. It is now in use on a 32,000 foot Water Line Project and is doing a magnificent job in keeping up with our backfilling requirements."—*Jones Contracting Co., Detroit, Mich.*

HOUSING PROJECTS

"Soil compaction with the Barco Rammer has been the key to earlier completions and lower costs for us."—*Paul Schleicher & Sons, Gary, Ind.*

OHIO TURNPIKE

"Exceptional time and labor is saved in the speed of the Barco Rammer with comparison to our previous method . . . We found it difficult to meet the rigid specifications required by the Ohio Turnpike Commission until we instituted the Barco Rammer, and can recommend it very highly to any organization having to meet specifications."—*Angell Construction Co., East Lansing, Mich.*



This photograph shows a Barco Rammer working on the Trenton Freeway in New Jersey.

**WHEN
YOU'RE
UP AGAINST
A TIGHT
SCHEDULE—**

ONE of the most important advantages users get with Barco Rammers for soil compaction is ability to handle big jobs in minimum time. When time is at a premium, BARCO PERFORMANCE PAYS DIVIDENDS!

Time after time, it has been proven that no other type of equipment can match BARCO PERFORMANCE. The Barco Rammer is a completely self-contained unit; no auxiliary or extra equipment is required. On area tamping, where specifications call for 95% to 97.5% (modified Proctor) compaction, one man can average 20 to 30 cubic yards of fill per hour, day after day.

If you are not already using the Barco Rammer for soil compaction work, find out about it now! *Worldwide Sales and Service. BARCO MANUFACTURING COMPANY, 512J Hough St., Barrington, Ill.*

BARCO RAMMER

For Soil Compaction Close to Walls, Culverts, and Abutments—in Trenches, Ditches

CONSTRUCTION EQUIPMENT NEWS



End Dump Rock Wagon

When Contractor Rusciano & Son Corp., reached the rock portion of their contract on the New York State Thruway they disengaged the Caterpillar 21 Scrapers from the Caterpillar DW21 tractors they were using and substituted Athey PR-21 Rock Wagons. (CM&E, April 1954) The PR-21 can be used with any standard

DW21 with one alteration—a new pump of 55 gpm must be installed to supply hydraulic power to operate the hoist. The rig is rated at 22 cu yd, and weighs 33,000 lb. Tractor and trailer length is 33 ft 4 in. — Athey Products Corporation, 5631 W. 65th St., Chicago, Ill.



Portable Service Station

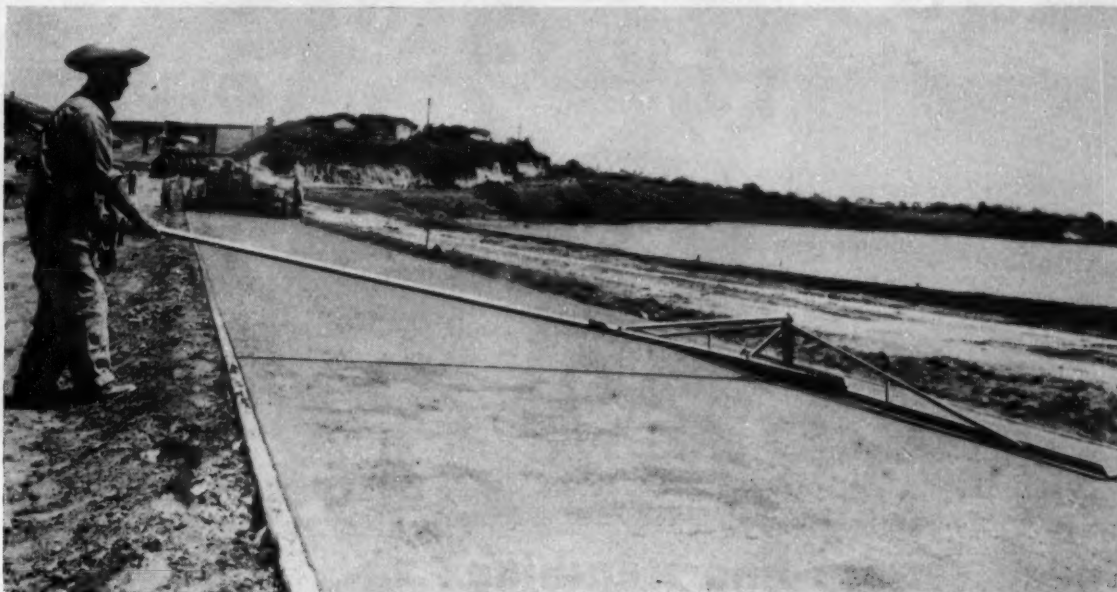
This small self-powered, self-propelled service station was designed for maintenance of heavy equipment. Powered with a 6-hp Wisconsin engine, the unit has an over-all width of only 31 in. The rig has provisions for three 100-lb drums, tool trays, service hoses and lubricant pumps. — The Prime-Mover Company, Muscatine, Iowa.



Right-Hand Drive Truck

Right-hand drive is now available in International light- medium- and heavy-duty trucks. This type of truck is particularly useful for roadside spraying, street-sweeping, etc. It's not available on diesel-powered models and for certain style bodies. — International Harvester Company, 180 N. Michigan Ave., Chicago, 1, Ill.

On-the-Job Previews of Machinery, Tools and Equipment



Magnesium Hump Knocker Weighs Only 14½ lb

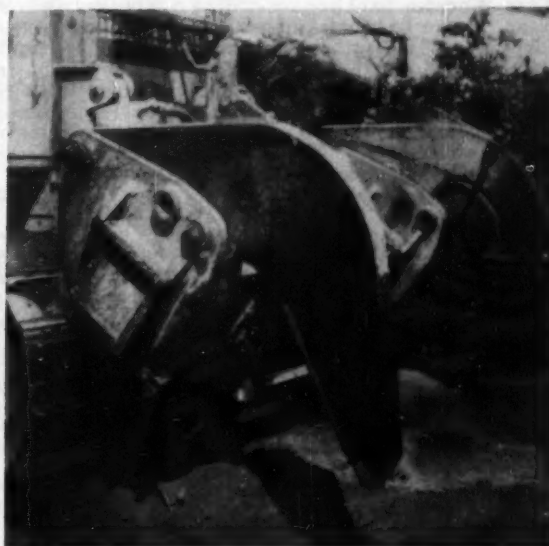
Bressi & Bevanda, West coast road builders, tired of struggling along with a 489-lb "hump knocker", had this flyweight tool designed. The knocker bar is 16 ft long with a handle 12 ft long. It can easily be handled by one man. It's intended to flatten out and cut off without troweling the minute protrusions left

by the burlap bag behind a Johnson mechanical float. The magnesium alloy used in this new tool has a high steel-like resistance to abrasion and its simple design makes it easy to transport and store. It was manufactured by **Kay M. Grier Engineering Company**, North Hollywood, Calif.



New Hi-Boy Mixers

Two additional units have been added to the line of Hi-Boy Truck Mixers and Agitators, the Model M, in 4½- and 5½-cu yd capacities. Both models are guaranteed to mix ½ cu yd more than their normal rating and meet standards of Truck Mixers Manufacturers Bureau — **Blaw-Knox Company**, Blaw-Knox Equipment Division, Pittsburgh, 38, Pa.



D8 Root Cutter

Used with the ATECO Rock Ripper, a new root-cutting blade capable of penetrating 30 in. below the surface to cut roots up to 12 in. in dia. is now available. Its blade is 3 in. thick and 18 in. wide at the bend, tapering to 10½ in. width at the point. Entire unit weighs 8,000 lb. — **American Tractor Equipment Corp.**, 9131 San Leandro Blvd., Oakland 3, Calif.



Service lines go in fast with the new Ottawa backhoe on one end of the MM UTIL Wheeler and heavy-duty loader on the other. Unit trenches, loads, backfills and levels.

Speed service-line trenching with a cost-cutter on each end

Heavy-duty trenching for utility service lines becomes a faster, lower-cost job with this new Ottawa backhoe on one end of a Minneapolis-Moline Wheeler and loader on the other.

This Wheeler backhoe unit digs clean, square trenches, ditches and footings to a 9 ft. depth, offers bucket widths to 36". Backhoe reaches 15'4" for digging, 8'3" for dumping into highest trucks. Loader backfills and levels to complete the job with cost-cutting speed.

A complete line of unitized attachments makes full use of extra Wheeler power, greater Wheeler torque at moderate engine speed. Attachments include forks for loading and hauling, lifting cranes, excavating and loading buckets, dozer blades,

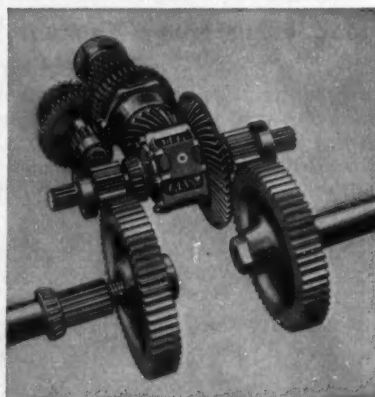
scrapers, winches, snowplows, material handling and maintenance equipment for construction, mining, all industry.

With "high turbulence" gasoline or "turbo-cell" diesel engines, MM Wheelers deliver full-rated power, extra-heavy construction that pays off in longer unit life.

Before you buy any loader, see your Minneapolis-Moline dealer-distributor. Have him demonstrate to you that low-cost Wheelers will return your money sooner, pay you longer.



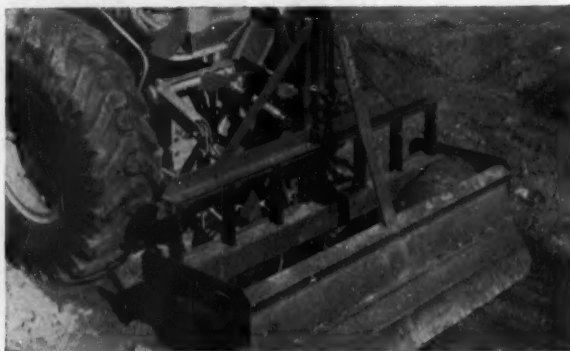
MINNEAPOLIS-MOLINE
MINNEAPOLIS 1, MINNESOTA



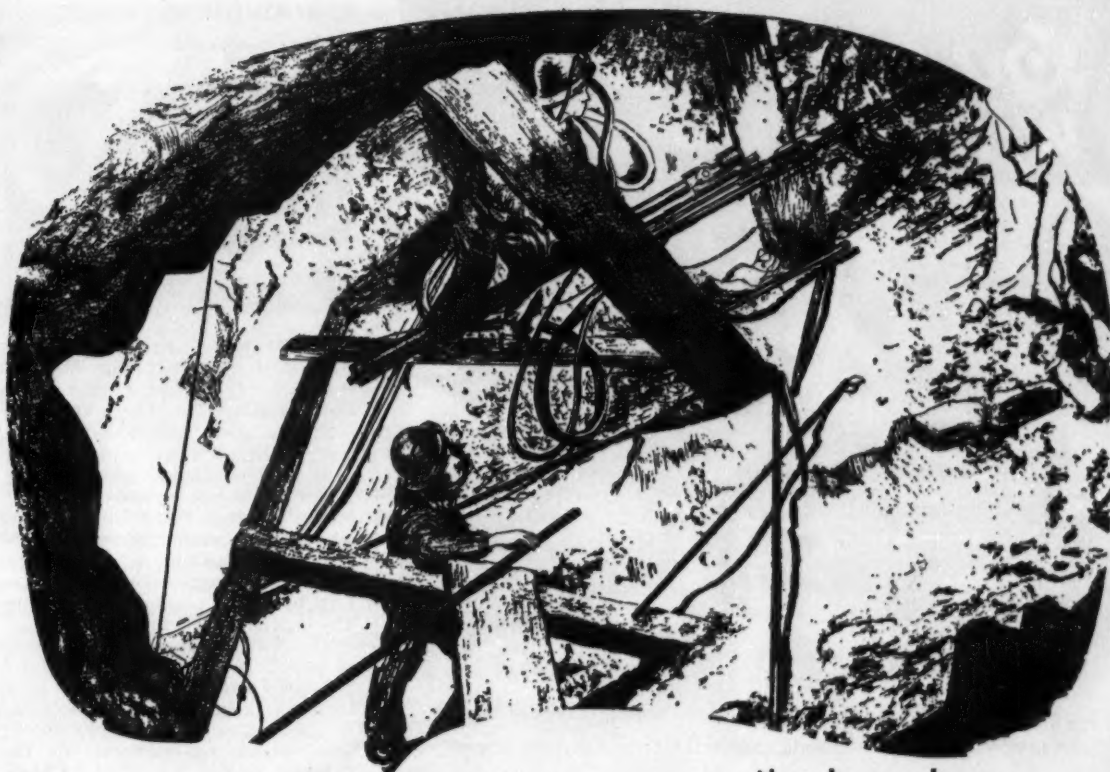
UTIL Wheelers pay you in longer tractor life with heavier construction, live rear axles 3 inches in diameter, bull gear final drive, greater bearing surfaces. Transmission and differential operate in a constant oil bath.



Mowing around job sites, along highways, in plant yards is a low-cost operation with this flexible hydraulic drive mower mounted on the 30 hp. RTI Wheeler.



This Wheeler and hydraulically-controlled scraper offer leveling accuracy in a low-cost package. Heavy-duty 3-point hitch controls scraping depth, provides rigid mounting.



they're using
CRUCIBLE HOLLOW DRILL RODS
 at Climax



High on Colorado's continental divide, the Climax Molybdenum Company is working the largest underground mine in the United States.

As an example of the size of this operation, just one cavity — the "Glory Hole" — was made by the removal of 70 million tons of ore. And regular production will soon be at the rate of 28,000 tons of ore per day.

It's a job that demands skillful mining technique... and the best of equipment. That's why Crucible Hollow Drill Rods are extensively used. For they are produced to *tool steel standards* by the leading producer of tool and special purpose steels. To you, this means dependability — fewer broken rods and lost bits. So for *lowest cost per foot of hole drilled* specify Crucible Hollow Drill Rods.

Visit us at Booth 600

American Mining Congress Show
 San Francisco, California
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CRUCIBLE

first name in special purpose steels

54 years of *Fine* steelmaking

HOLLOW DRILL ROD

CRUCIBLE STEEL COMPANY OF AMERICA, GENERAL SALES OFFICES, OLIVER BUILDING, PITTSBURGH, PA.
 REX HIGH SPEED • TOOL • RESISTAL STAINLESS • MAX-EL • ALLOY • SPECIAL PURPOSE STEELS

Canadian Distributor — Railway & Power Engineering Corp., Ltd.

You get "ACTION"
with a...

ROGERS
TRAILER



You get ACTION in loading and unloading because they are properly designed by long experienced specialists; you get ACTION in maneuverability because of correct weight and load distribution; you get ACTION in faster road travel because alloy steel main members assure lightness with strength; you get ACTION in controlling the trailer under all conditions due to massive brakes of advanced design. And above all you get ACTION on the profit side of the ledger in exceptional freedom from repairs year after year.

These features are embodied in a complete line of trailers including one specifically adapted for every hauling service. Write or phone for our large illustrated catalog.

YOU GET MORE
FOR YOUR MONEY
IN A
ROGERS
TRAILER

EXPERIENCE
builds 'em



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Distributed by
220 Orchard Street



Divided bed, tilt deck trailer with gooseneck.

EQUIPMENT NEWS . . .

Continued from page 175



NEW D2 LOADER AND ANGLE-DOZER — Known as the McEwen Hydraulic Overhead Loader, it is claimed that this machine will automatically give free and complete track oscillation while dozing and oscillation restriction while loading. The machine has instantaneous finger-tip control, and all loading stresses are contained within the loader mechanism so that major stresses are carried on the tractor. Low hydraulic pressure is a feature. The unit can be changed from a loader to a dozer by one man in less than 15 min. The capacity of the bucket is 1 cu. yd. Further information regarding this machine can be obtained through Caterpillar dealers, or by writing the manufacturer. — The Atlantic Bridge Co., Ltd., Lunenburg, Nova Scotia.



DOUBLE GROUSER TRACK SHOES—Owners of Caterpillar D8 Tractors working in rock and other hard surfaces will welcome this new double grouser track shoe designed for a considerable greater resistance to bending, about 300% or more. Resistance to bending is achieved by having two parallel grousers lower in height than the single grouser shoe, but wider. The body of the shoe is also made thicker. The second grouser at the mid-section of the shoe provides protection to the track shoe bolt head, so that they are not subjected to pounding which usually causes loosening of the bolts. —Caterpillar Tractor Co., Peoria, Ill.

(Advertisement)



North Carolina clay is hard digging, yet an Eimco 105 with an inexperienced operator loaded 153 trucks in its first 8 hour day on the job. A conventional front end loader in the same price category with the same bucket capacity and under identical conditions using



an experienced operator was only able to load 75 trucks in the same length of time. You too, can get twice the production for the same capital outlay by buying an Eimco 105.



On the Waldo grade north of San Francisco an Eimco 105 is used in the tunnel to speed up mucking. As the top is broken out to make way for the huge steel supports muck runs down into the two pilot headings



where only 15-20 minutes mucking time is required for approximately 75 yards per side. Fast, small trucks carry the muck out to stockpile where the same 105 loads into large trucks during drilling cycle.



Stockpile loading into trucks in Massachusetts. Eimco 105's load rock, sand, gravel, slag, brick, clay or any other material and two speed discharge makes it possible to fill large or small trucks. Independent track



operation provides unlimited maneuverability, simple controls make handling easy. Write for more details to The Eimco Corporation, Salt Lake City, Utah.



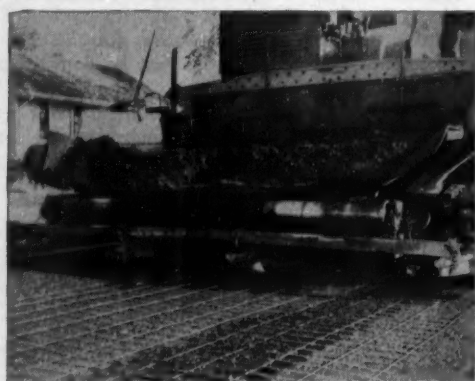
EXTRA YEARS of trouble-free service are assured from streets that are reinforced with American Welded Wire Fabric. Even with heavy traffic loads, rate of cracking is reduced, progressive damage to slab and subgrade is prevented, and repair costs are kept low.



CONSTRUCTION COSTS are kept low when you reinforce with American Welded Wire Fabric. The big sheets lie flat and stay put during pouring; they are easily placed by minimum crews.



LONGER SLABS and fewer joints are possible with American Welded Wire Fabric reinforcement. The network of close-spaced steel wires gives concrete extra strength and retards cracking.



MANY APPLICATIONS of reinforced asphaltic concrete, some in service on test roads for many years, indicate that you should reinforce your next asphaltic concrete resurfacing job with American Welded Wire Fabric.

For city street or superhighway... ask for the quality fabric with the red and white tag

If you are building a multiple-lane thruway, if you're putting in a street for a new suburb, or if you're resurfacing an existing pavement, you can be sure your concrete will resist cracking, heaving, spalling, and pumping if it is reinforced with

American Welded Wire Fabric.

American Fabric not only meets the new ASTM specification A185-53T, it exceeds it. That's because we rigidly control quality at every stage of manufacture. We check wire size and spacing for uniformity, welds for

soundness, the finished fabric for strength. This pays off for you: it gives you extra assurance that your roads will hold up under the heavy pounding of today's traffic.

Ask specifically for American Welded Wire Fabric.

AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL CORPORATION, GENERAL OFFICES: CLEVELAND, OHIO

COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS

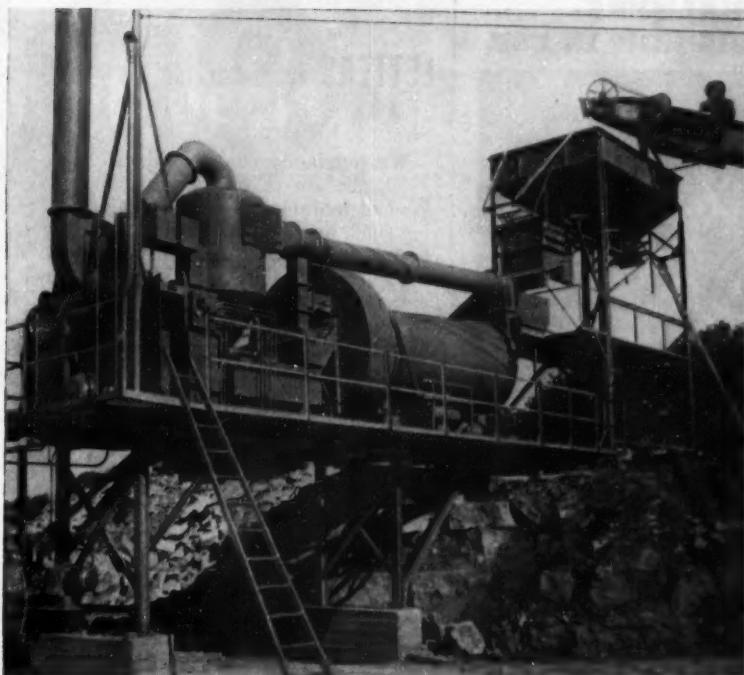
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS • UNITED STATES STEEL EXPORT COMPANY, NEW YORK

EVERY TYPE OF REINFORCED CONCRETE CONSTRUCTION NEEDS

USS AMERICAN WELDED WIRE FABRIC

UNITED STATES STEEL





ASPHALT PLANT—This 2,000-lb. capacity asphalt plant, the Speed Batch, is all electric and features central push button controls. It will produce a production run or a single

batch, as required. The dryer, pug-mill, dust collector, and all power and controls for their operation are combined on one compact frame as a unit. The unit is equipped with re-

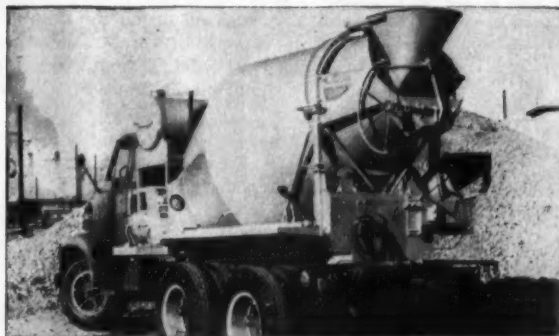
movable operator's platform, lifting hooks and folding stack for ease in transportation and erection. It is also available as a portable unit mounted on a steel gooseneck truck with pneumatic tires. It has a capacity ranging from 25 to 40 tons per hr depending upon moisture content of feed material and type of mix.—**Universal Engineering Corp., Cedar Rapids, Iowa.**

POCKET SIZE SELECTOR—Ramset is offering a pocket-size selector which gives at-a-glance guidance, the proper selection of fasteners, disks and charges used with powder-actuated tools. It is designed so that immediate cross-line reading can be obtained by matching sliding scale indicator with hardness and thickness data for each use in steel or concrete. Compact reference tables also indicate the proper charge. These selectors may be obtained without charge from Ramset Dealers, or by writing direct to—**Ramset Fasteners Div., Olin Industries, Inc., 12117 Berea Road, Cleveland 11, Ohio**

MOTOR GRADER MOVIE—A new full-color sound movie on Adams motor graders is now available from local Adams dealers. It is 20 min in length, features the operating advantages of Adams machines and

(Continued on page 184)

TRANSCRETE AVAILABLE IN 3 TO 6 YARD CAPACITIES



CMC's Transcrete—the simplest truck mixer of all—features the famous "Thoro-Mix" action that charges, mixes, and discharges all slumps faster.

Large drum diameter, deep "L" section blades and a progressively increasing blade slope are drum design features that make for more thorough mixing, more positive discharge, and a greater ability to handle stiff, low slump mixes.

Transcrete's time saving efficiency means more trips per day as mixer or agitator.

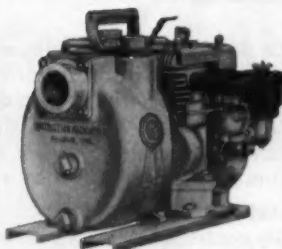
Quality construction and simplified rugged design assure trouble-free life.

Transcrete offers you the choice of a profit making size at the price you want to pay.

SOLD & SERVICED BY AMERICA'S BEST DISTRIBUTORS

CONSTRUCTION MACHINERY COMPANIES WATERLOO, IOWA

CMC DUAL PRIME PUMPS ARE LIGHTER WEIGHT YET LONGER LIVED



4M — 4000 G.P.H.

New dual volute design makes priming rapid, automatic and dependable. Unipacked shaft seal is protected by rapidly spinning liquid screen. Fewer parts — easier to service.

ALL SIZES

Built in all pipe sizes 1½" through 4". Other CMC Dual Primers in 6", 8" and 10" sizes with capacities to 240,000 G.P.H. Larger pumps have water cooled engines — gasoline or diesel. Also full line of electric pumps and pumps for belt drive.



40M — 40,000 G.P.H.

THOUSANDS OF ALLIS-CHALMERS MODEL D MOTOR GRADERS NOW IN USE



FINISHES BETWEEN FORMS, cleans up, loads trucks, backfills, landscapes . . . at low cost.

Five Years in the Field Prove Big-Grader Performance at One-Third the Cost

From its introduction in 1949, the Allis-Chalmers Model D established itself as a real pacemaker in the motor grader field. It was the first low-cost machine to offer tandem drive, single member tubular frame and the famous ROLL-AWAY moldboard. The "D" has proved again and again that it does outstanding work on both construction and maintenance.

Several easily mounted attachments make it invaluable all year 'round: hydraulically controlled, rear-end loader; shoulder maintainer that is interchangeable with loader bucket; hydraulically controlled scarifier; both blade and V-type snowplows.

Allis-Chalmers has now added even more to the Model D's workability. It offers a new 50 brake horsepower, "POWER-CRATER" engine; leaning front wheels** and power circle turn**. Yet the Model D's original cost is still only one-third that of a large grader, and operating, service and replacement part costs are proportionately low.

We invite you to talk with your nearby Allis-Chalmers dealer . . . compare values . . . and then ask for a demonstration.

**Optional equipment

ROLL-AWAY and POWER-CRATER are Allis-Chalmers trademarks.

ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

LETTERS from contractors—

Sirs:

We purchased our first Model D in July, 1952. We are called on to do almost every kind of job known to the industry from paving small private driveways and parking areas to the larger street and road jobs. We also do a lot of paving inside buildings such as garages and warehouses. We find the Model D will deliver the goods in close places and on small jobs with a minimum amount of hand labor which is the difference between profit and loss on most small jobs.

The maneuverability, operator's vision, and mobility of the Model D make it a money-maker on any job, large or small. We find the Model D ideal for curb and gutter excavation, cutting sub grades, working intersections, laying down cold-mix materials, spreading base materials and finishing.

We purchased our second Model D in June, 1953, because our first machine had proved to be such a good investment. The Model D's do seventy percent of all our grader work, at our initial investment of about one-third that of the large machine. Our operating costs, fuel and repairs on the Model D's are less than one-third that of the large machine.

HUGH HANLEY
Norris-Hanley-Norris
General Contractors

Sirs:

On May 16, 1952, I took delivery on my Model D and in my opinion there is not a better machine built for small grading work. For spreading rock and dressing up shoulders, it is a dandy . . . you get up on the shoulder and dress it up without any break, and when you get through your work is done. No going back to repair rough places made by a heavier machine.

This grader hasn't been in the shop since it was purchased. I can grease it all over in five minutes. I believe it has made many times what it cost me.

L. E. BUHLER
L. F. Buhler Construction Co.

Sirs:

We are very pleased with our Allis-Chalmers Model D Motor Grader. This machine is being used to rough grade and finish grade streets and lots on our 75 acre development. Our area is exceptionally rocky, but we feel we have done big grader work with this machine. We believe this is the toughest machine for its size we have seen.

The "D" is outstanding in its ease of operation. Our operator says he has excellent visibility at all times. It is economical to operate and has worked very satisfactorily.

I. J. MAY, President
Southwest Development Co.



high heels and low costs start here!

STANOLUBE

REG. U. S. PAT. OFF.

HD-M

STANOLUBE HD-M is Standard's new and better heavy duty motor oil. With greater detergent-dispersant quality and higher oxidation stability, it keeps engines clean and minimizes wear. Your nearby Standard Oil service-supply center stocks STANOLUBE HD-M for fast, local delivery.

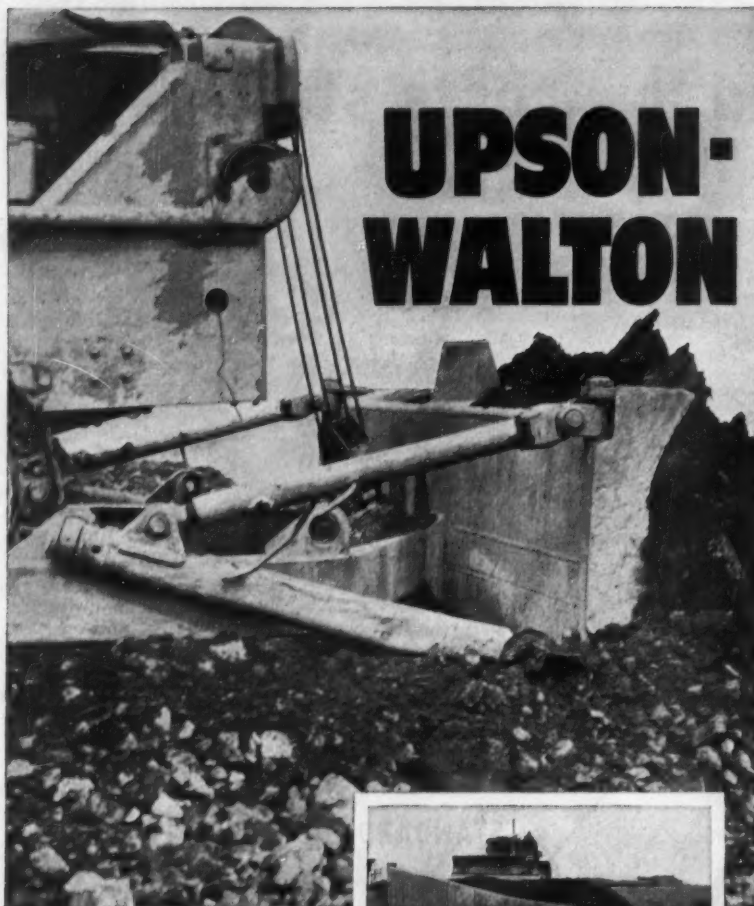
● A remote location posed a lubrication and fuel supply problem for the Vulcan Corporation, makers of wooden heels and shoe lasts, when they built their new mill in Michigan's Upper Peninsula. Like other Midwest companies needing fuels and lubricants in remote places, the people at Vulcan soon found that no one could serve them as well as Standard. Since the early construction stages Standard Oil has successfully maintained fuel supply and has provided dependable service in even the severest weather—without any costly delays.

In addition Standard supplied STANOLUBE HD-M, a superior motor oil that has kept hard-working engines like new. Despite hard usage in mud, snow and over rough roads, there has never been a breakdown due to lubrication failure. Both down-time and lubrication costs have been kept low.

For advice on *your* lubrication program or information on how Standard can help *you* lower costs, call your nearest Standard Oil office or write to Standard Oil Company, 910 S. Michigan Ave., Chicago 80, Illinois.

STANDARD OIL COMPANY (Indiana)





UPSON-WALTON



Wire rope that's built for tough going

OUT on the job site you'll find more and more contractors choosing Upson-Walton wire rope for their replacement needs. U-W craftsmanship and strict quality standards build in extra service and long life.

Available in all standard sizes and constructions. Order from your distributor who carries stocks for your convenience. Free catalog on request.

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MANUFACTURERS OF WIRE ROPE, FITTINGS, TACKLE BLOCKS—ESTABLISHED 1871

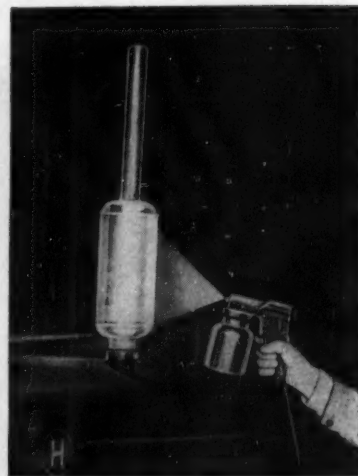
Page 184 — Construction METHODS and Equipment — August 1954

(Continued from page 181)

shows application by owners on various types of work. If your local Adams dealer does not have it, contact the J. D. Adams Mfg. Co., Indianapolis, Ind.



CUTTING AND GAS MIXER ATTACHMENT — Air Reduction now has available a new cutting attachment and a new jet-type mixer which, it is claimed, greatly extend the cutting, welding and heating range of Airco Style 800 general purpose oxyacetylene torch. The new jet mixer handles all welding and heating tip sizes with complete flame stability. Sputtering, popping and flashback are minimized as a result of the modern design features built into the mixer. Rubber sealing rings provide a gas-tight seal with hand tightening which cuts down time for tip changes. The new cutting attachments known as Styles 1800 and 2800 give added versatility and cutting range to the Airco 800 torch. The style 1800 will cut steel up to 6 in. thick and the style 2800 will cut steel up to 8 in. thick. Standard Airco cutting tips may be used with the attachments.—Air Reduction Sales Co., 60 E. 42nd St., New York 17, N. Y.



SPRAY GUN—This spray gun is a compact, lightweight, heavy-duty unit that is a completely self-contained unit that can spray from either open or closed containers—even from a barrel. It contains no compressor and operates merely by

(Continued on page 186)



A squeeze of the trigger and 2" x 8" form shoring is anchored to concrete roadbed!

REMINGTON STUD DRIVER speeds fastening job on West Coast Highway

TEMPORARY ANCHORING OF FORMS TO CONCRETE can be time-consuming and costly—but it wasn't that way on the new San Francisco Freeway. Here, the Remington Stud Driver did the job in record time by setting up to 5 fastening studs per minute!

The forms were used for pouring the Freeway's railings and curbing after the concrete roadbed had set. A workman simply moved down the base strip with the Stud Driver, and it was securely fastened! When the curbing was in, the forms were removed and the studs broken off below the concrete surface. The small craters that remained were smoothed over with grout.

SAVINGS UP TO 80% IN FASTENING COSTS ARE NOT UNCOMMON with the Remington Stud Driver. Its speed, light weight (6 lbs.), and freedom from

wires and hose make it ideal for all kinds of construction fastening. Find out how you can save with this powder-actuated tool by mailing the coupon below.

QUESTIONS YOU ARE ASKING

QUESTION: What caliber cartridge powers the Stud Driver?

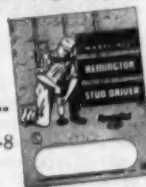
ANSWER: 32 caliber power loads are available in six grades, each designed for your specific fastening requirements.

MAIL THIS COUPON TODAY

Industrial Sales Division, Dept. C.M.E.-8
Remington Arms Company, Inc.
Bridgeport 2, Connecticut

Please send me a free copy of the new booklet showing how I can cut my fastening costs.

Name _____
Position _____
Firm _____
Address _____
City _____ State _____



Remington DU PONT

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DELTRAC

CEMENT ACCELERATOR

Integral Accelerator
Densifier and Hardener
for Concrete and Mortar

Add Delrac Cement Accelerator at the time of mixing and your concrete cures faster—becomes exceptionally dense and hard.

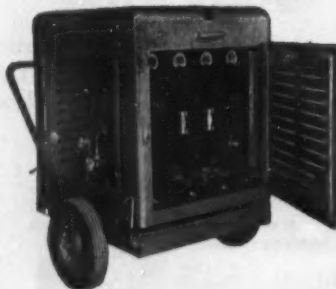
Add it to a Portland-cement mortar mix and the mortar becomes fat and strappy—extremely easy to use.

Write for Bulletin 600

DELTRAC CORP.

24 Newell St.
Watertown, New York

**Power in
a handy
"package!"**



Easy to move because it's balanced. Doors of this portable Electric Plant open for operation. Entire weatherproof housing is quickly removable for servicing. Gas tank is underneath for extra safety. Dependable "U.S." unit is D.C. for battery charging or operating portable tools. Available also in A.C. "U.S." builds the world's most complete line. Write for information, briefly stating your requirements.

**UNITED STATES
MOTORS CORP.**
420 Nebraska St.
Oshkosh, Wis.



(Continued from page 184)

plugging in on any regular ac electrical outlet. With each gun 15 ft. of polyethylene distance tubing is furnished, so that spraying can be accomplished from either can or barrel. It is made 100% of all metal parts. —Power Products, Inc., 175 E. 87th St., New York 28, N. Y.



MEDIUM-DUTY WELDING TORCH

—The new Torchweld 45 will weld steel from 28 gage to 1/2 in. thick, making it particularly suitable for pipe welding, automotive welding, and sheet metal fabrication. It weighs just 11 oz. including the mixer, but is still rugged enough to do the job. Two complete series of swaged welding tips, one-piece and screw-in styles are available in 12 sizes. The one-piece tip produces a flame with a semi-pointed cone which permits maximum heat concentrations on small areas. The screw-in type gives a semi-blunt flame cone and is exceptionally resistant to abuse. A special cutting attachment converts the torch into a cutting torch with a capacity for cutting steels from 1/8 to 1 1/2 in. thick. —National Cylinder Gas Co., 840 N. Michigan Ave., Chicago 11, Ill.



BRUSH DEFIES ACID—The Oxco Super Gong, a brush with a filling of stiff long-wearing Du Pont Tynex black nylon bristles, is claimed to outlast other type brushes by 5 to 1. It has a one-piece block and handle, and is shaped from solid Saran plastic and is practically indestructible. —Ox Fibre Brush Company, Frederick, Md.

**Save time and money
on construction jobs**



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helps you solve your
toughest construction
problems

With the construction work that lies ahead for every engineer, it is only up to you to assure yourself of superior workmanship—assure your work of the finest structural qualities—by providing yourself with this revision of the famous Hool and Kinne Library—the books which for years have been providing structural engineers with the facts they need on every problem concerned with the design and construction of civil engineering structures.

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Revised by R. R. ZIPPRODT,

And prepared by a staff of sixty-three well-known engineers, each a specialist in his field.

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Each one of these six volumes is a complete reference in itself on some aspect of structural engineering. The library

►COVERS the how and why of foundation and substructure design and construction, the general theory of structural members, the detailed design of such members, and the design of their connection with other members.

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WHEN PIPELINES CROSS WATER explosives research pays off

The tremendous power of dynamite, skillfully and ingeniously handled, made it economically possible to cross the wide, deep Tennessee River (inset above) with two parallel pipelines, 50 feet apart. Trenches blasted underwater through hard red clay in the shallows, and lime rock in the 40-foot-deep channel, opened the way for speedy dredging operations . . . another example of the efficiency of modern explosives and blasting methods.

Hercules' research in the pioneering and development of explosives and our extensive service facilities are available to help you in solving blasting problems on construction jobs or in mining and quarrying operations.

Explosives Department

HERCULES POWDER COMPANY

974 Market St., Wilmington 99, Del.



Birmingham, Ala.; Chicago, Ill.; Duluth, Minn.; Hazleton, Pa.; Joplin, Mo.; Los Angeles, Cal.; New York, N. Y.; Pittsburgh, Pa.; Salt Lake City, Utah; San Francisco, Cal.

(Advertisement)

KR84-6



ONE DEMONSTRATION ...SOLD VOGT, Inc.

Vogt, Inc., of Okauchee, Wisconsin, witnessed a 4-Wheel Drive SHOVELoader demonstration February 11, 1954, at their washed sand and gravel pit. Mason and torpedo sand, and 1", 2" and 3" washed gravel were loaded into trucks. The SHOVELoader also demonstrated digging and loading bank run gravel with frost 2 feet deep on bank and mixed with hardpan. After the demonstration Vogt, Inc., gave three big reasons why they decided to buy the SHOVELoader.

1. The TRIPLE-ACTION bucket which breaks back 43° down low, crowds and hoists in one motion, heaping easily. Such heaping action helped load 5 and 6-yard trucks in one minute's time.

2. The forward reach of the SHOVELoader (minimum is 3' at top of lift fully dumped) made it easy to spot and peak all loads in the center of the box of all the diversified hauling equipment used.

3. The planetary reduction drive in each wheel minimized skipping of drive wheels, avoiding throwing of dirt into washed sand and gravel.

If you want the best value for every dollar you spend, see a SHOVELoader demonstration before you buy any loader. By writing The Baker-Lull Corporation, 355 West 90th Street, Minneapolis, Minnesota, you can obtain demonstration reports along with Bulletin AD-55A to prove to yourself that SHOVELoader is the new leader in loaders.



THE NEW LEADER IN LOADERS



BITUMINOUS MIXING UNIT—This is a self-contained, highly portable, twin-shaft, continuous flow bituminous mixing unit with capacities up to 40 tons per hr. Designated as the Cedar Rapids Model CM Commercial Mixer, it is designed for jobs such as patching, surface parking lots, driveways, alleys, yards, tennis courts, etc. Material is fed into a package drier from a two-compartment hopper equipped with reciprocating feeder. Adjustable bin gates proportion the aggregate according to the specifications. The independent enclosed bucket elevator delivers multiple hot-mix aggregate to the twin shaft, continuous-type mixer where it is mixed to specifications with a constant flow of bitumen from the weight calibrated metering pump on the mixing unit. This mixer plant can be mounted for stationary installation to discharge directly into trucks without use of delivery conveyors. Complete details and specifications may be obtained from Iowa Mfg. Co., Cedar Rapids, Iowa



PULL STUMPER—This Fleco pull stumper for use with track-type tractors consists of a high-quality cast steel single tooth which is connected to the tractor draw bar by a one-piece cast-steel frame. It is operated by cable working through an A-frame from one drum of cable control. It can be operated down to a depth of 36 in. to cut lateral roots. Ripping of old surfacing, hard-packed soil and other materials can be accomplished with this unit. It is quickly detached when necessary. It is offered in three sizes for use with the Caterpillar D6, D7 and D8 classes.—Fleco Corp., P. O. Box 2370, Jacksonville, Fla.

**WHEN
YOU BUY**

**SELF PRIMING
CENTRIFUGAL PUMPS**

DIAPHRAGM PUMPS

**LOOK FOR
THIS PLATE**



**USED BY
THESE PEOPLE**

BARNES MANUFACTURING CO.
Mansfield Ohio

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Plainfield, New Jersey

**YOUR
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- INADEQUATE POWER
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- QUALITY CONSTRUCTION
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**The Non-Metallic Woven Tape
that resists abrasion, moisture
and hard use longest**

LUFKIN HI-LINE

The new Lufkin Hi-Line is designed in every way for longest wear. The tough new miracle synthetic fibres used in the line are dimensionally stable—even after repeated soakings. A specially compounded plastic coating that resists abrasion, cracking, mildew, moisture and temperature changes protects the bold, easy-to-read markings. The case is of hand-stitched genuine leather, which lasts longer according to field tests.

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TAPES • RULES • PRECISION TOOLS
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with the exclu-
sive Straddle
Mounted
Pinion . . .



FUNK PRODUCTS INCLUDE:

Right-Angle Take-Offs.
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Jack Shaft Extensions.

Ford Tractor Con-
version Kit adapts 6
Cyl. Ford engine,
double power. (See
picture below.)



Here is a NAA Ford Trac-
tor converted with Funk
NC Kit, other kits for any
Ford Tractor.

This exclusive Funk develop-
ment assures complete gear
tooth contact at all times by
providing a pinion with a taper
roller bearing support at each
end driven by an input shaft
with a lubricated floating spline, eliminating misalignment
from improper installation or load deflection . . . some of
the many reasons why you can expect longer, trouble-free
service from FUNK Gear Reductions. Fit all SAE flywheel
 housings. Special ratios or special adaptations of standard
units supplied on small orders. For keeping old equipment
on the job economically, write for catalog and prices of
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FUNK AIRCRAFT CO.

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THE HOLEMASTER—Failing's lat-
est contribution to the drilling in-
dustry is the Model CBH Holemaster
—a rugged, compactly built highly
mobile drill designed for fast drilling
of vertical blast holes. Combining the
hydraulic chain feed with the use of
compressed air for the removal of
cuttings, the CBH produces holes
that are clean, straight and easily
positioned. It is completely self-con-
tained requiring no auxiliary equip-
ment for its operation. It will drill
blast holes to 400 ft using 2 7/8-in.
drill pipe. Hole diameters vary
from 4 1/4 to 6 1/4 in. It is powered by
a LeRoi air-cooled, three-cylinder
reciprocating-type engine with rated
capacity of 450 cfm at 50 psi. —
George E. Failing Company, Enid,
Okla.



PAYLOADER ADDITION—Newest
addition to the torque-converter-
driven Payloader tractor shovels line
is the Model HRC, a four-wheel-drive
unit with bucket capacity of 1 yd
struck-load and 1 1/3 yd heaped. It
is available with either gas or diesel
engine and is equipped with power
steering. It also is equipped with
the Hough heavy-duty full-revers-
ing transmission which gives four

(Continued on page 194)

(Advertisement)



On road relocation at Palisades Dam, near Irwin, Idaho, Gar Wood equipped HD-15 (at left) slopes and grades — following up Gar Wood equipped HD-20 (below) which handles the heavy pioneer dozing on steep inclines.



Heavy Rock Conditions at World's Largest Earthfill Dam Can't Stop Gar Wood Dozers!

The Palisades Dam on the Snake River near Irwin, Idaho, largest earthfill structure ever built by the Bureau of Reclamation, is a \$76 million irrigation and hydroelectric project destined to completely change the economics of southeastern Idaho.

The dam is 2200 ft. in length and 273 ft. high. Width at bottom is 2250 ft. with a width at crest of 40 ft.

The earthfill and rockface construction will require 14 million cu. yards of earthfill plus over 150,000 cu. yards of concrete. When the dam is completed electrical generating capacity will exceed 130 million kw-h.

Features of the design include two cutoff trenches 30 ft. deep. One trench, 100 ft. wide, is at the upstream toe of the dam. The other, 300 ft. wide, is at the axis. Two concrete cutoff walls extend part way across the dam in the main cutoff core.

Gar Wood dozers, on Allis-Chalmers HD-20 tractors fitted with Gar Wood Model 281 cable control units, were used to spread the fill brought to the site and dumped in windrow by bottom dump wagons. As much as 40,000 cu. yds. of fill per day was regularly produced and spread by ceaseless cycling.

The dozers were also used on the many miles of road relocation at the dam site and in clearing land for the borrow pits. Grading alone required handling of over 352,000 yards of material, most of which contained over 40% broken rock. On the borrow pits Aspen trees up to 14" in diameter were cleared and piled at the rate of 5 acres per 8 hour day.

Both the HD-15 (top photo) and the HD-20 (large photo), are owned by Dillsworth & Punnea of Helena, Montana. Both are equipped with Gar Wood dozers and cable control units.

GAR WOOD INDUSTRIES, INC.

TRACTOR EQUIPMENT SALES • WAYNE, MICHIGAN



M-4030N

the
TALBERT way
is the
easy way

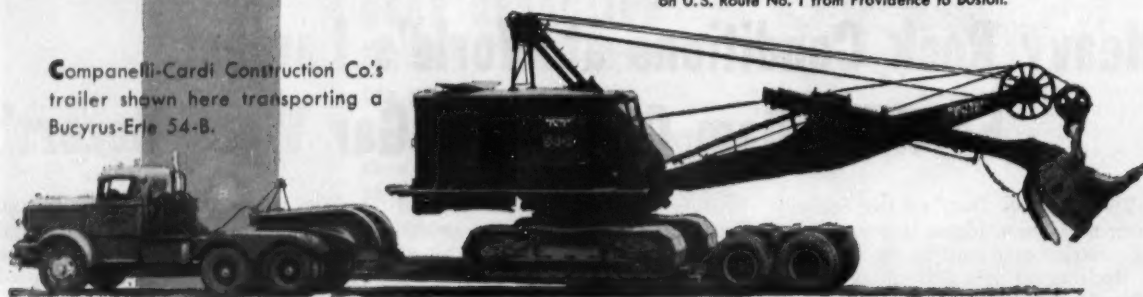


Talbert model TD-75-RG-RA,
owned by Companelli-Cardi Con-
struction Co. of Hills Grove, R. I., is
shown hauling a Link Belt K-595.



The Project: Road Construction
on U.S. Route No. 1 from Providence to Boston.

Companelli-Cardi Construction Co.'s
trailer shown here transporting a
Bucyrus-Erie 54-B.



... nearly anything which needs to be moved,
can be profitably hauled on a Talbert Trailer.
Talbert Removable Gooseneck Trailers are
adaptable to many specialized hauling jobs—
find out how Talbert Trailers can work for you.

WRITE
FOR NEW
TALBERT
CATALOG
No. 104



THE TALBERT CONSTRUCTION EQUIPMENT CO., of Lyons, Illinois
manufactures a complete line of low-bed trailers and dump semi-trailers

THE TALBERT-WAY IS THE EASY WAY

NEW JOY DRILL SAVES OVER 13 $\frac{1}{2}$ ¢ A CU. YD. ON NEW YORK THRUWAY JOB

Contractor Pulls Drilling Costs 'Way Down With Joy Challenger Hammer Drill

On a section of the New York Thruway job, a large contractor compared drilling costs when using a new Joy Challenger Drill and 4" wagon drills.

He drilled 20 to 24 ft. holes in hard limestone, allowing 10% hole loss to break to grade. Results (at right) indicated total saving with the Joy Challenger of 13-7/10¢ a cubic yard!

The revolutionary Challenger is self-propelled, very mobile. Each of three models is equipped with a Joy TM-500 Hammer Drill—largest ever built. Hole size is to 4½" dia., 50' deep.

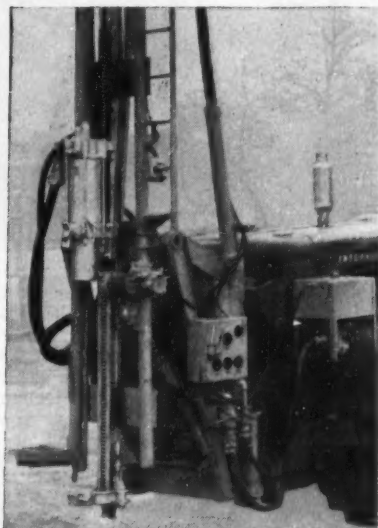
Full details in free Bulletin 87-U. Write to Joy Manufacturing Company, Oliver Bldg., Pittsburgh 22, Pa. In Canada: Joy Manufacturing Company (Canada) Limited, Galt, Ontario.



The revolutionary, new Joy Challenger Drill at work on the New York Thruway. This amazing drill reduced contractor's drilling costs 13-7/10¢ a cubic yard!

OPERATING FIGURES REVEAL SAVING:

ITEM	JOY CHALLENGER	4" WAGON DRILLS
Hole Pattern	10 x 12	6 x 6
Footage per 8-hr. shift	225	275
Yards per 8-hr. shift	900	330
Yards broken per ft. of hole	4	1.2
Labor per yd. at \$40.40 shift	\$.045	\$.122
Steel and bits per yard	.09	.06
Fuel & lube oil per yard	.10	.14
Drilling costs per yard	.235	.322
Saving in drilling cost (.322—).235)	.087	—
Saving in powder per yd.	.05	—
TOTAL SAVING PER YARD	.137	



Closeup of the powerful Joy TM-500 Hammer Drill as used on all three models of the Joy Challenger.



W40 C-5219

JOY

CONSTRUCTION EQUIPMENT MANUFACTURERS
FOR OVER HALF A CENTURY



Kroger supermarket in Glendale, Missouri. Architect: Cay Weinel, St. Louis, Missouri. Contractor: White Development Corporation, St. Louis, Missouri.

EASY DOES IT

... with lightweight, versatile

LACLEDE STEEL JOISTS

Fast placing and erection . . . combined with modern design and strength make Laclede Steel Joists the answer to today's needs in roof construction.

Specify these LACLEDE Products:

Multi-Rib Reinforcing Bars • Steel Pipe • Welded Wire Fabric
Form and Tie Wire • Spirals • Conduit • Corrugated Steel Centering



LACLEDE STEEL COMPANY

St. Louis, Mo.

SAVE hours every day—
days every month... *with*

MILLER Tilt-Top
2 minute
loading!



MODEL "B" 16 TON \$1175.*

The following equipment is optional and extra: hydraulic tilt control, two-speed winch, electric brakes.

* Plus freight and Federal Tax.

Time saved between every job means time added on the job. MILLER Tilt-Top's quick tilt loading enables ONE man to load or unload in less than two minutes . . . spend the extra time gained in profit-making operations on the next job. With its better maneuverability, easier backing, fast trailing and quick loading—MILLER Tilt-Top's the ideal extra trailer for extra production. Standard oak platform is 14' x 8', optional 16' available.

SEE YOUR DEALER OR WRITE

MILLER
research engineers



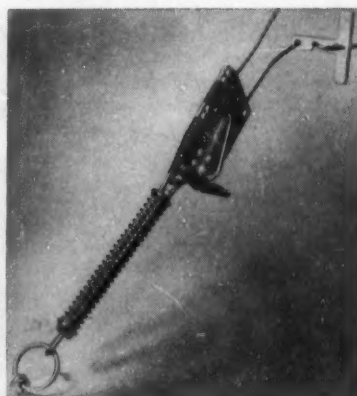
457 S. 92nd Street, Milwaukee, Wis.

(Continued from page 190)

speed ranges in either direction. Much greater production is claimed as a result of the new torque-converter drive. The drive also acts as a cushion for the entire power train and minimizes maintenance and prolongs machine life.—The Frank G. Hough Co., 716 Seventh St., Libertyville, Ill.



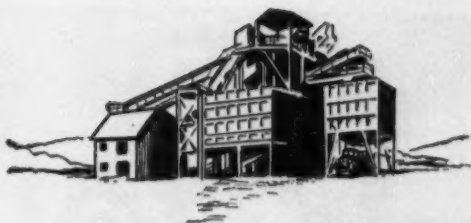
HANDY WATER TANK—This Indian 5-gal., Armco zinc grip steel, air conditioned, form-fitting galvanized supply tank can be used for carrying drinking water to construction crews in the field. It can also be used to carry gasoline, kerosene, oils, etc. It has a large opening for quick easy filling, a convenient handle for carrying about by hand, and also shoulder straps for carrying on back similar to a pack basket.—D. B. Smith & Co., Utica, N. Y.



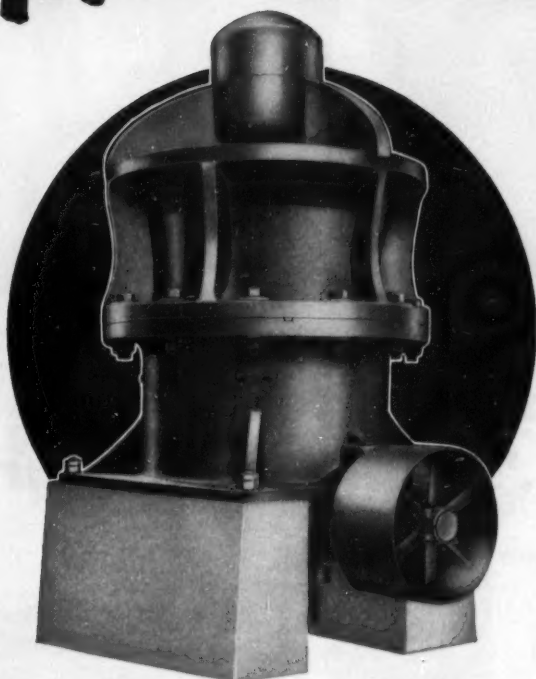
SECURING RIG—This securing rig permits quicker and easier anchoring of guy wires and cables. It also provides automatic control of tension, insuring uniform cable tightness. Essentially the Tyzem guy wire securing rig consists of adjuster mechanism and the tension controlling compression spring. The free end of a guy, wire or cable is passed through the Tyzem locking mechanism which is attached to the tensioning spring. The cable is then pulled through until the spring compresses fully, then released to the open spring

(Continued on page 197)

more efficient
stone production



Means More Profits



...as more than
806 TRAYLOR TY
crusher operators
have discovered

The compact design, non-chokable bell head and curved concaves of a Traylor TY Crusher assure maximum operating efficiency for producing aggregate on the job. Higher output at lower horsepower per ton is a big Traylor feature which adds greatly to your profit picture. Less down-time for maintenance, greater hourly production, *plus a more uniform aggregate* are proven advantages of a Traylor TY . . . all thoroughly explained in a big fact-packed bulletin. Mail coupon for your free copy now.

Traylor TY REDUCTION CRUSHERS

TRAYLOR ENGINEERING & MANUFACTURING CO.
677 MILL ST., ALLENTOWN, PA.

Name: _____

Position: _____

Company: _____

Address: _____ State: _____

Sales Offices: New York • Chicago • San Francisco
Canadian Mfrs: Canadian Vickers, Ltd., Montreal, P.Q.



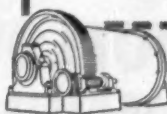
Primary Gyratory Crushers



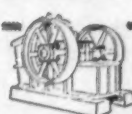
Rotary Kilns



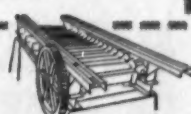
Secondary Gyratory Crushers



Ball Mills



Jaw Crushers



Apron Feeders



Some of Codell's crews work against a backdrop of steel construction as wagon and hand drills bite into the limestone. The Bethlehem Hollow was furnished by Contractors Service and Supply Co., Winchester, Ky.

3½ Million Cu Yd Excavated For G. E.'s Appliance Park

A huge manufacturing plant, in itself a major industrial center, is nearing completion under the supervision of General Electric Realty Corp. at Buechel, Ky., southeast of Louisville. Called Appliance Park, it is dominated by five main plant buildings, and will be operated by General Electric Company for the manufacture of major appliances.

Clearing and leveling the sloping 1000-acre site upon which Appliance Park is situated was no easy task, for it called for the removal of 3½ million cu yd, a portion of which was hard limestone.

This phase of the job was handled by Codell Construction Co., Winchester, Ky. Codell used Multi-Use steel bits on rods of 1 in. and 1¼ in. Bethlehem Hollow Drill Steel, and drilled blast holes ranging in depth from 2 ft to 20 ft. Bethlehem Hollow was used exclusively in this important construction project.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

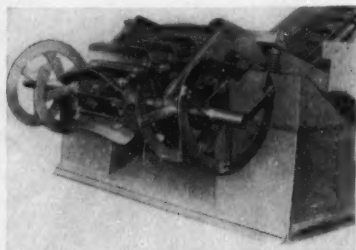


Left to right: W. F. Conlin, project manager, Turner-Struck Construction Co., general contractor; D. K. Shore, Bethlehem Steel Co.; Geo. M. Eady, president, Geo. M. Eady Construction Co., utilities contractor; W. O. Billiter, superintendent, Codell Construction Co.

Two Grades of
BETHLEHEM HOLLOW DRILL STEEL
CARBON • ULTRA-ALLOY (chrome moly)



(Continued from page 194)
slightly. The locking lever is snapped over and into a safety-lock keeper. Standard units provide a cable tension of 100 lb. and are available for any size cable up to and including 7/32 in. — **Eastern Rotocraft Corp., Box 110, Doylestown, Pa.**

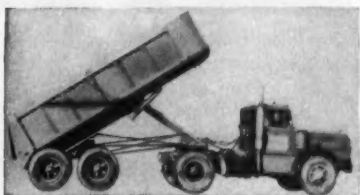


NEW MOLDBOARD—A new self-cleaning moldboard, designed for the Athey 125 HiLoader for use in pit and quarry operations, has sheer angles on all surfaces to prevent material carry-over. The width of gather has been extended to 10 ft to provide greater loading capacity. The throat opening is also sharply angled to reduce possibility of material build-up at that spot. It is available either as original equipment or as a field attachment. — **Athey Products Corp., 5631 West 65th St., Chicago, Ill.**

WHERE TO BUY

ROAD CONSTRUCTION COMPANIES

● We offer for your consideration a winch operated dump trailer that is capable of handling larger loads cheaper and faster than anything on the market today.



Our coverage on this item is: New York, New Jersey and New England.

Our representative will meet with you anytime.

TRANSIT SALES & SERVICE, INC.
23 SOUTH STREET, DANBURY, CONN.
FRANK T. MEE, JR., TEL. 3-4437

STOP that WATER

With **FORMULA NO. 640**, a clear liquid which penetrates 1" plus in concrete, brick, stucco, plaster, etc. Seals out water, dirt. Holds 30' head. Use outside and in. Preserves all absorbent materials. Sold 14 years. Quick, economical, sure. \$3 in 55's. Free sample. See Sweet's.

HAYNES PRODUCTS CO., OMAHA 3, NEBR.

(Advertisement)



In 60 minutes or less, **MALSBARY 250** steam cleaner completely removes mud, dirt-impregnated grease and sticky tars from this Caterpillar D4, in for overhaul.

Does Steam Cleaning Pay?

Here's what users of Malsbary HPC Cleaners report:

Doubles track roller life—Greasy, abrasive ore dust and caked mud wore out track rollers in 1200 hours on the Mesabi Range. Then the maintenance superintendent began steam cleaning every 24 hours, just before greasing, reports: "We now are getting 2400 hours or more on rollers."

Repaints without hand cleaning—Cleaning asphalt, road oil and briquet binder from 40 tank trailers was strictly hand work until a **MALSBARY HPC** cleaner took on the job. It quickly softens and blasts away these sticky materials, leaves an excellent surface for repainting.

To handle such tough cleaning jobs requires lots of water or steam plus real impact. You get both in **MALSBARY HPC** cleaners.

HPC means high pressure combination — **MALSBARY HPC** cleaners use pumps for pressure instead of steam. You have choice of cleaning with cold water, hot solution (steam), or hot rinse — combined with pressures to 400 p.s.i. These pressures literally explode water or steam (to 325° F.) from the cleaning nozzle, blast away stubborn asphalts and

caked dirt other cleaners can't touch. **MALSBARY** high impact and volume (360 to 2100 g.p.h., depending on cleaner size) results in such average cleaning times as—

D7, D8 tractors	1½ - 2 hrs.
TD9 Dozers/shovel	2 hrs.
Motor grader	3½ hrs.
1½-yd. shovel	3-4 hrs.
Payloader	45 mins.

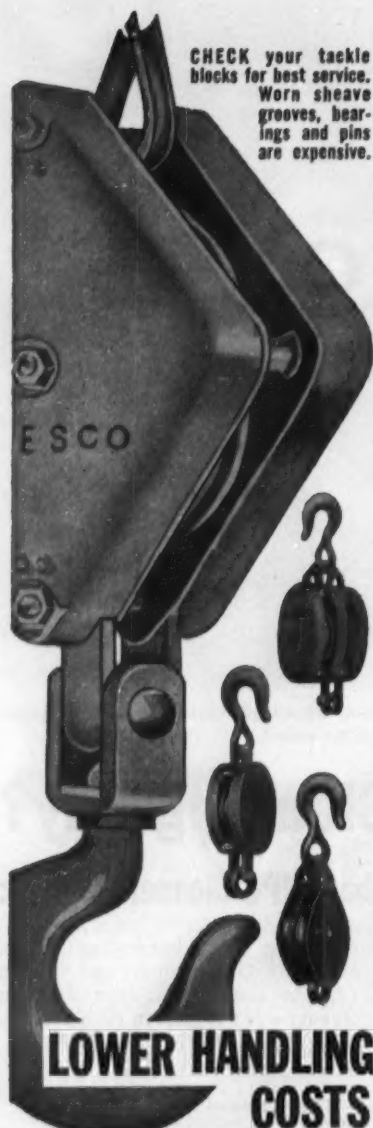
In addition, **MALSBARY HPC** cleaners supply wet steam for cleaning and degassing tanks and hot water for concrete mixing in zero weather.

Why settle for a halfway cleaner when a **MALSBARY** can handle all your cleaning needs? Try it. Ask your **MALSBARY** dealer to demonstrate on your job now... or write today for Catalog 150-R and "Why and How of Steam Cleaning" folder.

55



Room C-8, 845 92nd Avenue Oakland 3, Calif.



CHECK your tackle blocks for best service. Worn sheave grooves, bearings and pins are expensive.

LOWER HANDLING COSTS

are often attained by using "the one BEST block" for a specific load. MADESCO Blocks correctly designed and engineered for your specific operation may effect savings YOU can benefit from!

Twenty-five years' experience in designing and making blocks for "a-thousand-and-one" different uses means that MADESCO Blocks help speed hoisting, give trouble-free service, help prolong rope life.

Write—today—for bulletins and consult us about your specific needs.

MADESCO TACKLE BLOCK CO.
EASTON, PA.

MADESCO
BLOCKS

HAE-M593-2-54

New PUBLICATIONS From MANUFACTURERS

The catalogs and bulletins reviewed below will keep you posted on latest developments in construction equipment and materials available for your use.

TWO-TON ROLLER—A 4-p. booklet describing in complete detail the new Andwall portable tandem 2-ton roller—designed for paving contractors, can be obtained by writing—Andwall Mfg. Co., Oconomowoc, Wis.

RETAINING WALLS—A new illustrated folder, titled "Lock Up Unruly Slopes Behind These Metal Walls," describes how metal bin-type retaining walls confine earth and help stabilize embankments along highways, railroads, streets and streams. Sectional bin-type design and simple bolted construction help keep cost low and strength factor high. Erection and installation scenes are prominently displayed in this 4-p. booklet. Copies may be obtained free by writing to Armco Drainage & Metal Products, Inc., Middletown, Ohio

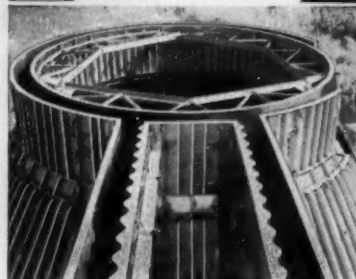
MOTOR PUMPS—This booklet describing the selection of the proper motor pump for any specific job is printed in a slightly different form. It features a slide film presentation type and gives brief descriptions of what a centrifugal pump is and how it works. It points out quantity, pressure, friction losses and head that must be considered in choosing a pump to meet specific installations. This "film-in-a-booklet" is available only in limited copies, so if you should like to see it, make your request soon to the Ingersoll-Rand Co., Cameron Pump Div., 11 Broadway, New York 4, N. Y.

SMALL BOILERS—A new 4-p., 2-color bulletin AD-134 which introduces a new line of CB small boilers has just been released. This new line is available in 15 to 40 hp (15 to 150 steam, 30 hot water) for heating and processing. This booklet may be obtained from—Cleaver-Brooks Co., 326 E. Keefe Ave., Milwaukee 12, Wis.

FORGED - TRAK WHEELS—The story how Athey Forged-Trak wheels have solved cross-country hauling problems for contractors is told in a new folder, Form 1010. It not only includes photographs of the work in process, but also gives factual job data. Copies may be obtained by writing to Athey Products Corp., 5631 W. 65th St., Chicago 38, Ill.

SIDE LOADER—The side-loading lift truck, the Travelador, is illustrated and described in a new 8-p. (Continued on page 201)

Reduce costs and
INCREASE PROFITS
by renting these metal
forms for concrete



Economy Metal Forms save time, labor and material. They quickly lock together with a simple twist of a clamp. Standard units fit most jobs. Where needed, special forms can be fabricated to specification.

ECONOMY FORMS CORP.

Home Office: Des Moines, Iowa

DISTRICT SALES OFFICES: Kansas City, Mo.
Minneapolis, Minn. • Fort Wayne, Ind. • Cincinnati, O.
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ECONOMY FORMS

metal forms for concrete construction

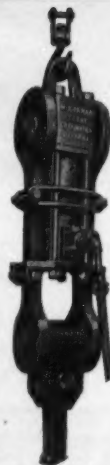
McKIERNAN- TERRY

Ruggedly-Built

PILE EXTRACTORS

Provide exceptional pulling power, with the sharp energy of blow needed to vibrate and loosen stubbornly set piling. These double-acting extractors come in two standard models—heavy and extra heavy. Standardized line also contains 11 double-acting hammers and 5 single-acting hammers. Write for bulletin.

Also builders of coal and ore bridges, bulk material unloaders, bridge operating mechanisms, hoists and marine equipment, and specially designed machinery.




McKIERNAN-TERRY CORPORATION

MANUFACTURING ENGINEERS

14 PARK ROW, NEW YORK 38, N. Y.

MR 345



Link-Belt Model K-595 dragline working for Strasburg Clay & Coal Company near Baltic, Ohio. Rig has 3½-yard bucket, 80-foot boom.

"Doubles cable life – cuts operating costs"

THAT's what Edward "Rusty" McGinness, owner of the Strasburg Clay & Coal Company, reports after 5000 hours' tough stripping with his TORQMATIC-equipped Link-Belt dragline.

And with the Allison TORQMATIC Converter automatically absorbing shock loads he's kept repairs to a minimum—only \$24.00 in replacement parts on the drag, no repairs to the converter. The rig strips 100 tons of coal a day, uses 6 gallons of low-cost Diesel fuel an hour.

At first, Rusty was skeptical about having a TORQMATIC Converter. Now he calls it the "best unit ever made for a rig." And he should know—he's been in the coal business 15 years, has run every kind of mining equipment. Rusty reports the torque converter automatically protects cables, boom and engine from damage by absorbing sudden shocks.

There's a TORQMATIC Converter for a wide range of hard-working units from 40 to 400 horsepower. TORQMATIC DRIVES, the *matched* converter-transmission team, cut costs and boost production in trucks, scrapers, and other big equipment.

Many operators have converted their direct-drive units to TORQMATIC DRIVES to get better performance and longer equipment life. Ask your equipment manufacturer or dealer about Allison TORQMATIC DRIVES in your units. For engineering details and specifications, write direct.

Allison Division of General Motors
Box 894T, Indianapolis 6, Ind.

ALLISON TORQMATIC CONVERTER

Simple Design — one-piece cast converter elements — minimum maintenance

Compact, easy to install in existing equipment

Designed for power applications in the 40 to 400 hp range

Longer Equipment Life — absorbs shock, eliminates engine lugging, cuts maintenance costs



Allison
TORQMATIC DRIVES

COMPACT, EFFICIENT HYDRAULIC DRIVES FOR CRANES • TRUCKS • TRACTORS •
SCRAPERS • SHOVELS • DRILLING RIGS

MORE *"Take Home"* DOLLARS for READY-MIX OPERATORS

Successful bidders in the ready-mix business have to meet varying conditions throughout the country. The T. L. Smith Company recognized this and was the first firm to engineer two distinct lines of truck mixers built to a high standard of quality, designed to meet highway weight laws, and priced to fit varying budgets. These mixers give you more "take home dollars", because there is a Smith-Mobile tailor-made to meet your individual problems. Write for bulletin.



PREMIUM Model

— the First Low-Cost
High Quality Truck Mixer

PREMIUM Model Smith-Mobile, pouring very low slump concrete for bridge pier on new expressway.



LOWER IN WEIGHT . . . reduced nearly half a ton. LOWER IN HEIGHT . . . overall height reduced to get under bins with low headroom and low bridges. LOWER IN PRICE . . . you save hundreds of dollars and still get top quality. Contact your Smith dealer now. See how *much* you get in this profit producing mixer for so little money. Ask for bulletin.

Completely redesigned for greater efficiency than ever before. Better weight distribution permits bigger legal payloads. Gross weight reduced nearly 800 pounds. Shorter overall length. Engine accessibility unequalled. Two-speed transmission built to aircraft precision. Much increase in quality . . . no increase in price. See your Smith dealer.



DE LUXE Model

— the Finest Truck Mixer
that Money Can Buy

DE LUXE Model, pouring basement. Note rate and uniformity of discharge.

Biggest news of 1954 in truck mixers is the Smith-Mobile line, including the new PREMIUM models and the DE LUXE models . . . dependable aids to the landing of more successful bids and more profit. Contact your nearby Smith dealer, or write:



The T. L. SMITH COMPANY

2851 NORTH 32ND STREET • MILWAUKEE 10, WISCONSIN, U.S.A.

Affiliated with Essick Manufacturing Co., Los Angeles, California

CONCRETE MIXERS

For BIGGER and BETTER Concrete Mixers and Truck Mixers . . . LOOK TO SMITH

(Continued from page 198)

bulletin just released by the manufacturer. It displays typical Trave-loader applications and shows the different attachments available for special handling jobs. Ask for Form 1360 from **Baker-Raulang Co., Baker Industrial Truck Div., 1230 W. 80th St., Cleveland 2, Ohio.**

THE NEW D8—Caterpillar has just published an attractive 4-p. booklet highlighting the features of the new Caterpillar D8 tractor. The D8 was recently increased in drawbar horsepower to 150. Copies of this Form 31081 can be obtained from any Caterpillar dealer or by writing directly to—**Caterpillar Tractor Co., Peoria, Ill.**

NEW ELECTRODE—Wear-Arc "Super WH" a new electrode for welding manganese steel is described in Bulletin AR-5 recently published by the **Alloy Rods Co., 5148 Lincoln Highway West, York, Pa.**

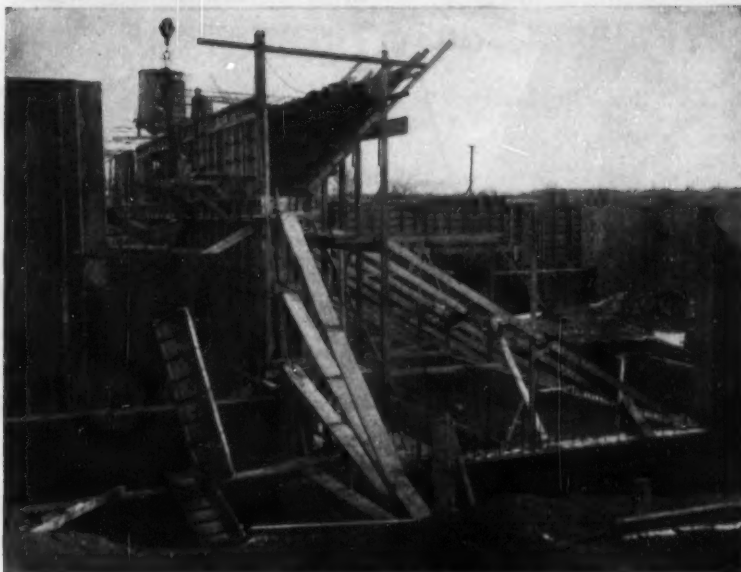
SUMP PUMP—A 20-page BJ Sumpmaster bulletin contains answers helpful in selecting any of 4,000 or more sump-pump models. The booklet enables you to determine the desired gpm and total head. Then use an easy selection chart to find the individual model number. Complete dimensions and outline drawings are included which make the selection of the pump needed a relatively simple matter. It is available without obligation from **Byron Jackson Co., Box 2017, Terminal Annex, Los Angeles 54, Calif.**

FIBERGLAS—A 4-p. publication which describes and illustrates fiberglass acoustical form board for poured-in-place roof decks is now available to architects, engineers, contractors and builders. This publication includes information about Owens-Corning's two types of incombustible form boards. One has a bonded Fiberglas mat facing to provide a uniform, more attractive appearance as an interior ceiling, and the other is sanded on one side for use when a smooth ceiling surface is desired. Copies of this interesting booklet can be obtained from—**Owens-Corning Fiberglas Corp., Toledo, Ohio.**

STEAM CLEANER—A 4-p. bulletin describing the Spontane steam cleaner, a unit that converts cold water to 80 psi steam in 45 sec, is available from the **Turbo Machine Co., Lansdale, Pa.**

LINER PLATE—The story of how liner plates are used for original tunneling operations or for relining existing masonry openings, conduits, service tunnels, underpasses, etc. is contained in a new 24-p. manual just published by the **Armco Drainage and Metal Products, Inc., Middletown, Ohio.**

(Advertisement)



Municipal Incinerator, New Britain, Conn., C. H. Nickerson, Co., Gen. Con.

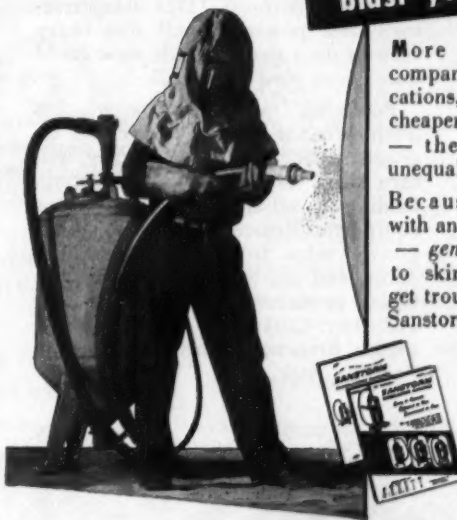
Many Forming Problems on Incinerator

Symons Forms fill need for many types of forming on Incinerator job. Haunch shown spreads from 18" to 5'-6". Symons Forms also used for 42' walls, chimney pads and slabs. Note scaffolding secured directly to forms with Symons brace plates.

Send in your plans and get complete layout and cost sheet—no obligation. Our Catalog F-9 will be sent upon request. Symons Clamp & Mfg. Co., 4255 Diversey Avenue, Dept. H-4, Chicago 39, Illinois.

SANSTORM IT!

blast your cleaning costs



More and more construction companies are cleaning steel fabrications, masonry, forms, equipment cheaper and quicker with Sanstorms — the sandblasting machines unequaled for low cost service.

Because Sanstorms are non-plug with any abrasive the job requires — gentle to smooth off or tough to skim off heavy scale — you get trouble-free performance with a Sanstorm.

Write today for **FREE** literature. Add any questions about your cleaning problems for Sanstorm recommendations without cost or obligation.

SANSTORM
MANUFACTURING COMPANY

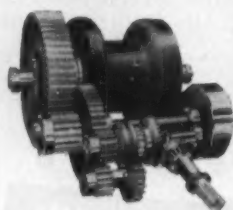
P. O. BOX 1173-15, FRESNO, CALIFORNIA





An equipment lesson from the Alcan project

... 61 CARCO winches needed on the job



Doubling the pulling power of the most powerful crawler tractors calls for a gear train that's tough and rugged. The Carco Model J winch converts tractor power into line pull efficiently and directly through a 4-stage, constant mesh gear train. The doubled line pull is made possible by a high ratio of gear reduction. As faster line speed is generally desired for paying out the line, a lower gear ratio is provided in reverse. Heavy-duty gears and shafts of heat-treated special alloy steel guarantee a large overload capacity. Precision cut, gears and shafts, with anti-friction bearings, operate in a continuous oil bath. Rugged simplicity and fewer parts make Carco winches more dependable and easier to service.

Probably the most versatile equipment on the Alcan project in British Columbia are powerful crawler tractors equipped with dozers and Carco winches. So useful has this "team" proven that 61 Carco winches and hoists have been purchased for this job... the largest number of tractor winches ever known to be used on a construction project.

Pictured is a Carco Model J winch on an International TD24 using tractor's own power to pull this heavy crawler up a steep hillside so it could doze access road down hill.

Powerful, mobile Carco winches double tractor pulling power and increase tractor "reach" . . . they will earn their way for towing, hoisting, loading as well as for emergency rescue equipment. Remember, you can expect greater value from the leading producer, and get it from Carco, first in winch production. PACIFIC CAR AND FOUNDRY COMPANY, Renton, Washington. Branches at Portland, Ore., and Franklin Park, Ill.



WINCHES FOR ALL
INDUSTRIAL TRACTORS

CARCO

IT'S YOUR BUSINESS . . .

Continued from page 32

Byk-Worrell Construction Co. 318 E. Bay St., Savannah, Ga. Housing project at Atlanta for the Atlanta Housing Authority, 419 Trust Company of Georgia Bldg., Atlanta 3, Ga. \$4,393,000.

Ukropina-Polich-Kral and John R. Ukropina, Box 105, San Gabriel, Calif. Grading, paving 8 bridges and 1 mi. of Los Angeles River Freeway between Sheila St., and Verona St., Los Angeles, Co. for California State Division of Highways, 120 S. Spring St. \$2,447,821.

Stearns-Roger Engineering Co., 1720 California St., Denver, Colo. 55-kw steam power plant, Las Vegas, Nev. for Southern Nevada Power Co., 109 S. 2nd St., Las Vegas, Nev. \$5,500,000.

Siesel Construction Co., 3530 Forbes St., Pittsburgh, Pa., 8-story basement brick steel apartment, garage, at Pittsburgh, for University Square, Inc. Schenley Hotel, Pittsburgh, Pa. \$4,500,000.

Louisiana Bridge Co., Kenner, La. (Brown & Root, Inc., 4100 Clinton Drive, Houston, Tex. and the T. L. James & Co., Ruston, La.) Greater New Orleans Expressway and approaches across Lake Pontchartrain. \$30,677,210.

Psaty & Fuhrmann, Inc. 369 Lexington Ave., New York City. East 73rd St. incinerator, Manhattan Borough, New York City, for the Department of Public Works, Municipal Bldg., New York 7, N.Y. \$4,672,000.

Fluor Corp. Ltd., 2500 Atlantic St., Los Angeles, Calif. Plant to produce anhydrous ammonia and urea, Pasco, Wash. for Columbia River Chemicals, Pasco. \$12,000,000.

Chas. H. Tompkins Co., 907 16th St. N.W., Washington, D.C. and **J. A. Jones Construction Co.**, 209 W. 4th St., Charlotte 1, N.C. Operations building and appurtenant facilities at Fort George G. Meade MD for U.S. Engineers, 24th St. and Maryland Ave., Baltimore, Md. \$19,944,451.

Bushman Construction Co., 4635 Wyandotte St., Kansas City 12, Mo. Airfield pavement drainage at Forbes Air Force Base, Topeka, Kan. for U.S. Engineers, 601 Davison Bldg., Kansas City 8, Mo. \$3,680,278.

You've never before seen Compaction like this!



Announcing the new and revolutionary **Buffalo-Springfield Kompactor**

What do we mean by "new"? There's *never* been anything like it before!

Why do we say "revolutionary"? Because the Kompactor is changing *drastically* the time and cost elements in soil compaction jobs!

Here are the spectacular results of tests in the field:

The Kompactor has met density requirements in one fourth the number of passes required with large sheepfoot, vibrating, or heavy pneumatic-tired rollers. One contractor reports a cost savings of 50% on an embankment job!

The Kompactor is self-propelled, reversible, and easy to maneuver on steep embankments, can work in close to abutments, culverts, etc.

There's a Buffalo-Springfield Distributor conveniently located to serve you.



The unique rolls of the Kompactor are *segmented*. The staggered "islands" that form the rolling surface enter loose material with minimum displacement, either forward or horizontally. They leave without disturbing compacted areas in any way. All compaction effort is *downward*, resulting in greater and more uniform density from lower elevations to top surface. As a result, *two passes with the Kompactor will often meet density requirements!*

Before you bid another soil compaction job, find out more about the Buffalo-Springfield Kompactor. It may completely change your time and cost picture, give you a clear-cut advantage in bidding those close jobs!

Write today for full information.

The Buffalo-Springfield Roller Co.
Springfield, Ohio



THE LEADER IN ROAD ROLLER DESIGN AND MANUFACTURE.



Bethlehem dowel units being installed near Weedsport, N. Y., during the construction of that portion of the highway. Contractor: Potter DeWitt Corp., Pavilion, N. Y.

World's Longest Express Highway Nears Completion

The New York Thruway is nearing completion. On it, a motorist will be able to travel north to Albany and all the way across New York state without a single stoplight or grade intersection.

The Thruway is designed for 70-mile-an-hour speeds. The pavement is finished to provide a tire-gripping, non-skid surface in all types of weather. At all points along the highway there is 1000-ft forward vision, and land-

scaping is designed on a broad, sweeping scale to relieve monotony.

Opposing streams of traffic are separated by a grass medial strip varying from 20 to 150 ft wide and more. Steep grades have been eliminated, with maximum rises of 3 ft in every 100. Eighty per cent of the highway will be 4-lane, the remainder 6-lane.

The materials used in building the Thruway were selected for longevity. The 9-in. cement pavement rests on a 12-in. granular base. Concrete-reinforcing bars and dowel units are two of the Bethlehem Steel highway products being used at many points along the Thruway. In addition, Bethlehem structural steel was used in several hundred bridges and overpasses and Bethlehem guard rail, both beam and cable types, protects many miles of the highway.



BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL



The main route of the Thruway extends from New York City to Buffalo. When the entire system is completed, however, motorists can travel comparable highways from Buffalo north to Niagara Falls and south to Pennsylvania, and from Albany to Massachusetts.

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A McGRAW-HILL PUBLICATION



Member of Associated Business Publications
and Audit Bureau of Circulations

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Portrait
of a man
helping
to reduce
your
insurance
costs!



Sure! — he's getting a drink of water (from a crisp, clean AJAX Cup). But he's also *reading* the safety message imprinted on the cup.

And safety messages *that get read* do help reduce accidents. The National Safety Council confirms that. And you know how accidents affect your insurance rates. Fewer accidents, lower costs. So . . .

Use AJAX Cups to put your safety messages in your worker's hand — where he'll see them several times a day, when he's relaxed, receptive, ready to read. (And he'll appreciate the comfort, convenience and complete sanitation of these crisp, clean, easy-to-drink-from AJAX Cups, too.)



AJAX® Cups and AJAX Drinking Water Tanks deliver fresh cool water to workers — mean less time lost on the job. AJAX Cups and dispensers are also ideal for stationary tanks, barrels, pipeline faucets. 4 oz., 6 oz and 7 oz. sizes packed imprinted with assorted stock safety messages — or your own message to order.



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(Actual case history from insurance company files)

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15 DIVISIONS FROM COAST TO COAST

CE-C

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BLAW-KNOX CONCRETE BUCKETS

There's a size and type of Blaw-Knox Concrete Bucket to speed your work and help you cut costs.

Roller Gate Controllable Discharge Buckets for normal or low slump concrete for general construction work; CAC Buckets with air-operated clam gates for low slump mass concrete specifications; Type C Manual Clam Gate Buckets for normal slump concrete.

See your nearest Blaw-Knox distributor for details.

Photo—courtesy
F. H. McGraw & Co.



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BLAW-KNOX EQUIPMENT DIVISION
PITTSBURGH 38, PA.
Offices in Principal Cities

Erection
costs almost
nothing

Gordon A. Peterson, Adolfsen and Peterson,
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"... we have found that our erection time
has been reduced to the extent that erection
costs are practically negligible."

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can save hundreds
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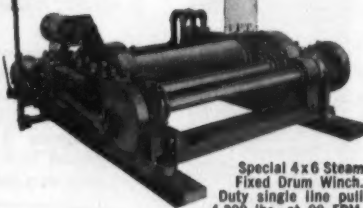
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on-the-job showing today. No obligation.

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meet them... either from an
all-inclusive line of standard
hoisting equipment or with
equipment engineered to your
specific requirements.

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Main Office and Works: SUPERIOR, WISCONSIN, U. S. A.
New York Office, 7 Day Street, New York 7, N. Y.

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RUGGED TAMPING JOB like this wall-to-wall excavation is turned into child's play with new Size 44's in the hands of these workers.

NEW Ingersoll-Rand Size 44 BACKFILL TAMPER

This brand-new Size 44 handles extra-heavy tamping jobs with ease. It's ideal where heavy compaction is required or for jobs close to abutments, culverts, walls and other tough tamping work where power rollers can't get near. Packs dirt solidly—evenly—quickly—without danger of additional settlement after the work is done!

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If you do tough, hard-to-get-at tamping work you'll find this Ingersoll-Rand Size 44 Backfill Tamper pays off handsomely every time you use it. Get full information on Size 44 from your I-R distributor. Ask him for a free demonstration to prove this powerful tool has just what you need.



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11 Broadway, New York 4, N. Y.

CUT YOUR TAMPING COSTS!

SAVE TIME & MANPOWER!

SPEED HARD-TO-GET-AT JOBS!



901-18A

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We can't tell the whole story here but if you are bidding on non-specification work you should find out about the Adnun Jr. Let us send you the latest bulletin.



ADNUN JR

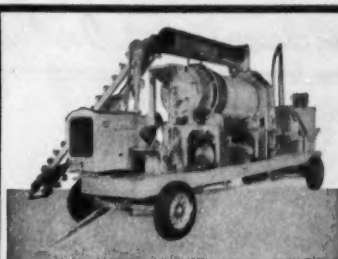
MODEL 8

BLACK TOP PAVER

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COMPANY**
FOOTE CONSTRUCTION
EQUIPMENT DIVISION

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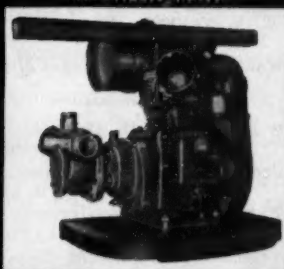
White Mfg. Co.

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ELKHART 6

INDIANA

WATER MAIN PRESSURE TEST PUMP PORTO PUMP A ROTARY, RUBBER GEAR PUMP FOR PRESSURE TESTING WATER MAINS and FIRE SPRINKLER INSTALLATIONS



Quickly develops required test pressure up to 200 PSI, eliminates expensive, time-consuming labor involved in hand pumping line to desired pressure—Only one man required for pump operation—Pump increases your profits and pays for itself by reducing time necessary to pressure test lines—Porto Pump excellent for jetting operations, core and exploratory drilling operations, cleaning earth moving equipment, and various other jobs requiring a portable pressure pump—Weights 95 pounds, easily carried—Simple to operate and maintain—Powered by a 4 cycle gasoline engine.

Dealers Inquiries Invited

PORTO PUMP, INCORPORATED
227 IRON STREET, DETROIT 7, MICH.

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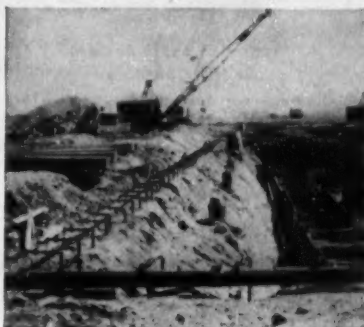
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#29 of a Series

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PUMP 20 MILLION GALS PER DAY TO KEEP SUBGRADE DRY

THE CENTER-LINE of this excavation was less than 300 ft from the Atlantic Ocean, which fairly flooded through the highly pervious sand.

• The problem was to lower 28 ft of groundwater in a 30-ft cut for a new concrete intercepting sewer—to do this on a site where contractors could recall previous experience of tough water-fighting at an excavation depth of only 16 ft, even with aid of wellpoints. Thus, the outlook was not exactly rose-colored.

• Yet the plan of the Griffin engineers and the efficiency of their pumps and wellpoints gave a sure, speedy solution. The truly enormous volume of 20 million gals per day was pumped under perfect control, keeping subgrade bone-dry and permitting economical open cut, except where sheeting was required (see photo) to protect existing sewers and structures.



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In Canada: Construction Equipment Co., Ltd.
Toronto Montreal Halifax

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(Classified Advertising)

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BUSINESS: USED OR RESALE

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6 Yard Concrete Batch Plant with three 2-yard Koring Mixers, Noble Batch, Cement Silos, etc.

5,000 Bbl. Robinson Bolted Cement Silo, 275 Bbl. per hour Vertical Cement Elevator, Robinson Cement Pump, Fuller Kinyon Pump, etc.

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1—404 1½ yd. Lima Drag Shovel.

1—25 ¾ yd. Northwest Shovel

1—Elmco 104 Rocker Shovel on D-4 Chassis

2—27 FD Euclids, 7-9 yards.

Portable Compressors, Pneumatic Tools, Welders, Pumps, etc.

Apply: Chief Storekeeper,

THE CONSOLIDATED MINING & SMELTING COMPANY
of Canada Limited
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SALES REPRESENTATIVES or dealers wanted to sell concrete saw blades direct to road-builders and general contractors. Tremendous repeat sales make this a most lucrative line if you have close contacts with road-building contractors. Several territories throughout U.S. still open. Send us complete personal data. All replies confidential.

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WANTED

Construction, light equipment for use in home building, etc., wanted for our dealers overseas. Suitable for sale or rental. Exclusive agency basis. Perma-Stone International Ltd., 320 Fifth Avenue, New York 1.

**Your inquiry
will have
Special Value . . .**

If you mention this magazine, when writing advertisers. Naturally, the publisher will appreciate it . . . but, more important, it will identify you as one of the men the advertiser wants to reach with this message . . . and help to make possible enlarged future service to you as a reader.

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CONSTRUCTION METHODS AND EQUIPMENT

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Manager

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Pittsburgh 22: 738 Oliver Bldg.

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Get the exact lengths and sections you need from Foster—all standard makes, delivered on time—and at Foster's standard low rental rates. Also Rental Pile Hammers & Extractors.

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PITTSBURGH 30 • NEW YORK 7 • CHICAGO 4
HOUSTON 2 • LOS ANGELES 5

ENGINEERS—FOREMEN—OFFICE MEN
Learn latest methods to organize and run work. Prepare for the top jobs.

Send post card for details

GEO. E. DEATHERAGE & SON
CONSTRUCTION CONSULTANTS

411 5th Ave., Lake Worth, Florida

GIANTS UNDER THE EARTH

The Construction of the Brooklyn-Battery Tunnel This is the story of the key men of the miraculous 20th century—those hardy human sandhogs who dug under water and blasted through earth and rock to build the slick, modern tunnels we use today for fast motor and railroad traffic. Illustrated and photos. Per copy \$1.00

Send check or money order to

PATRICK J. COSTELLO
182 E. 46th St. New York 17, N. Y.



On the New York State Thruway two pieces of equipment owned by the Savin Construction Company of Hartford, Conn. are shown at work. They are the Marion 111-M Power Shovel and a Euclid truck. USS Tri-Ten Steel was used to give added strength and toughness to the shovel boom and also to prolong life in the truck body by reducing wear.

USS HIGH STRENGTH STEELS help build famous New York State Thruway!

● Outstanding among the many pieces and types of earth-moving equipment working on this big highway project is the Marion 111-M Power Shovel. Working 50 hours per week, this 111-M with its 4-yard dipper, has been moving between 40,000 and 50,000 yards per month—a really remarkable record when you realize that this is the toughest kind of digging. It's 100% very hard lime rock.

To give this shovel the strength, toughness and fatigue resistance needed to handle jobs like this, the Marion Shovel Company selected USS Tri-Ten for use in the all-important shovel boom. The Engineering Department at Marion says,

"Tri-Ten was used because of its shock resisting ability at low temperature, together with high tensile strength. It also lends itself well to welding in the shop, which makes it relatively easy to handle."

Marion and other companies specializing in the construction of heavy-duty earth-moving equipment have a long record of use of USS HIGH STRENGTH STEELS. This is convincing proof of the ability of these steels to give equipment the stamina to stay on the job.

USS Tri-Ten, USS Man-Ten and USS Cor-Ten Steels resist wear, impact and abrasion. They have a yield point 50% higher than carbon steel. With these outstanding steels it is

possible to build maximum strength and toughness into vital parts ordinarily prone to failure. With them you can materially increase the strength of parts without increasing their weight. Or you can use USS Tri-Ten, USS Man-Ten and USS Cor-Ten Steels in lighter sections to reduce weight without reducing strength and stamina.

Contact our nearest office and let us show you exactly how you can apply USS HIGH STRENGTH STEELS to make your equipment able to do more work with less downtime for maintenance and repairs. For 20 years our engineers have cooperated with equipment manufacturers in applying these steels.

UNITED STATES STEEL CORPORATION, PITTSBURGH • AMERICAN STEEL & WIRE DIVISION, CLEVELAND • COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
NATIONAL TUBE DIVISION, PITTSBURGH • TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA. • UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS HIGH STRENGTH STEELS

USS MAN-TEN • USS COR-TEN • USS TRI-TEN • USS A-R STEEL



UNITED STATES STEEL

Methods Memo . . .

ANOTHER ROAD SHOW is planned by the American Road Builders' Association for the 1957 convention, January 28-February 2. In spite of much dissatisfaction with Chicago as the Road Show city in 1948, the next exhibit will be there in the International Amphitheater.

TELEVISION WAS USED by the Memphis chapter of AGC to tell the world, and particularly young men, of the opportunities and good future existing in the construction industry. President J. Walter Jones, Jr.; two past presidents, D. M. Dougherty and W. L. Sharpe; a young engineer, W. D. Nicholson, Jr.; and a carpenter apprentice, John Hile, appeared on the program "Your Future Unlimited," on WMCT Channel 5.

CONTRACTORS ARE FISHERMEN, TOO—at least many of them. So here is an interesting item that arrived in our mail. A Chicago manufacturer is producing a portable, powered fish scaler. Turn on the little electric motor and the gadget lifts off scales without labor and with no damage to the fish.

LONGEST CONTINUOUS is the claim made by Armco officials for the Armco Spiral welded pipe piles they shipped recently to the Straits of Mackinac Bridge project, a bridge to link Michigan's two peninsulas. Shipped in 93- and 78-ft lengths the two different

lengths are to be welded together and driven down to support caissons. Some of the pipe is 20 in. and some 24 in. in dia.

WE MANAGED to squeeze in a visit to a couple of "open houses" recently.

The first one was the 770,000 sq ft of building at the new Caterpillar plant down in York, Pa. The buildings are a model of planning and manufacturing facilities. According to L. C. Allenbrand, plant manager: "This new plant is just another step to further strengthen our parts and service factor."

We also journeyed to New York Mills, a suburb of Utica, N. Y., to attend the opening of a new branch of the Oliver Corp. A three-story building gives Oliver 60,000 sq ft under roof to warehouse parts and new equipment for the New England states. This branch is the seventh Oliver has opened in the last two years.

TO ASSIST the purchaser in ordering replacement parts, H. W. Moore Equipment Co., Denver International Harvester dealer, rivets an extra name plate to each new or used machine it sells. Number on the plate is master-filed in Moore's shop and parts department, along with the unit's original engine and serial number. Moore finds it speeds service considerably by making it simpler for those who can't find the original name plate (or who won't take the trouble to look for it) to identify their machines properly.

CONSTRUCTION BY MACHINE is the American contractor's way. And it takes many of them. We were reminded again the other day when we were told that LeTourneau-Westinghouse recently produced No. 2,000 in its Model D Tournapull line. Also, Schield Bantam reports the delivery of its 5,000th small excavator. Production on these started at the end of the war.

BOUNCED OFF THE SEAT of a scraper he was operating on a highway project on U. S. 66, Robert H. Green 32, of Beardstown, Ill., was injured fatally recently when the wheels of the big earthmover passed over his body. The accident occurred about 8:45 a.m. Apparently the machine struck a hole throwing him from the seat. Green had worked on the project since last fall.

These accidents happen all too frequently. We keep reading about them from all over the country. Seat belts

for operators have been broached, but how would an operator get clear quickly, in case of an upset? It bears repeating: Anyone operating a machine must keep alert all the time—for the greatest safety of all!



ANOTHER EDITOR, experienced in construction, has joined our staff. We welcome aboard Albert C. Smith who becomes a CM&E associate editor this month. Formerly, he was field editor for *Contractors and Engineers*, traveling over the country east of the Mississippi and covering all types of construction jobs.

Prior to becoming reporter and editor, Smith was a construction engineer for the Austin Company, American Bridge Division of U.S. Steel, J. F. Chapman & Son, and Turner Construction Co. He was graduated in civil engineering from Newark College of Engineering and is a member of the ASCE. During World War II, he served with the U.S. Army Field Artillery. With AI's help, CM&E will have broader coverage than ever, and readers can expect even more details of new and unusual construction methods and the equipment used to make them click.

A QUICK START was urged for President Eisenhower's \$50 billion road program by W. Cordes Snyder, Jr., president of Blaw-Knox Co., the other day after the Governors' Conference had initially opposed it.

Snyder said, "Our highway needs are a most appropriate challenge for this era. It will take the big-figure approach if our nation is to catch up with these needs. The rewards will be worth the billions of dollars required for such improvements."



CONCENTRATION—Managing Editor Angstadt gets checked out to operate Drott Four-in-One on TD-6. See article page 95

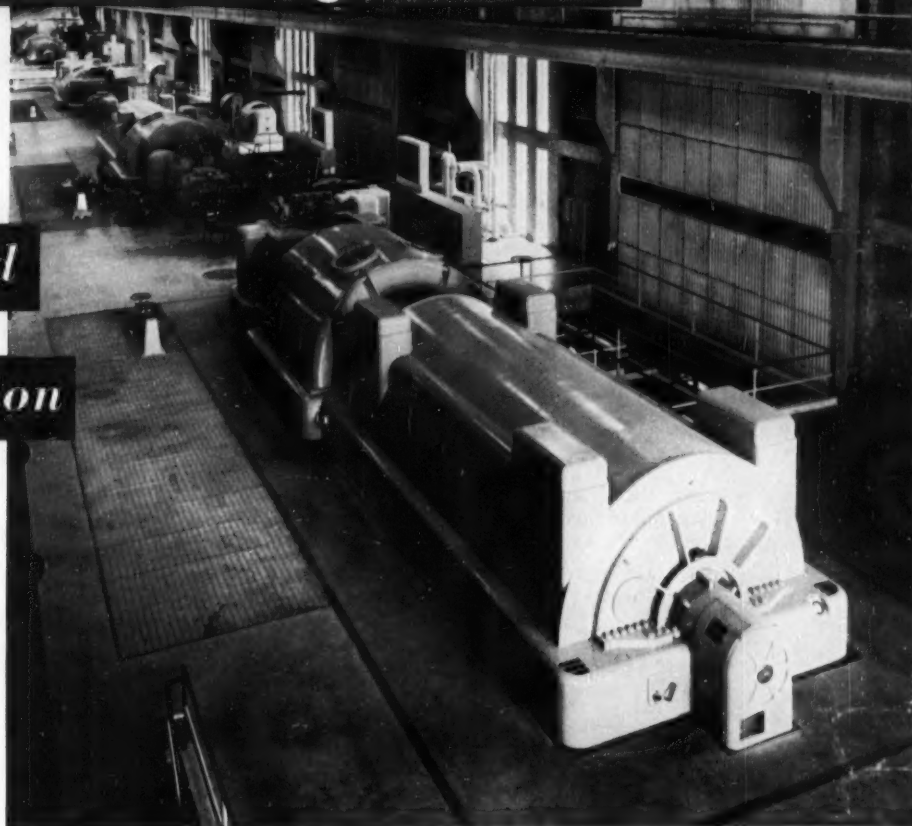
durable floors and grout...

aids to

uninterrupted

plant operation

Pacific Gas & Electric Co. Contra Costa Power Plant. Located 40 miles from San Francisco, Calif. Plant designed and constructed by The Bechtel Corp., Antioch, Calif., in cooperation with the Engineering Department of the Pacific Gas & Electric Co.



MASTERPLATE "iron-clad" concrete floors

Experience in all types of plants the country over has proved the value of Masterplate "iron-clad" concrete floors in helping to maintain a smooth flow of production, reduce maintenance expense and improve plant safety.

Only with Masterplate can you obtain a Masterplate "iron-clad" concrete floor with its important advantages*... 4-6 times more wear-resistant than the best plain concrete floor, spark-safe, non-dusting, corrosion-resistant, easy-to-clean and non-slip.

*Write for the Masterplate "see-for-yourself" demonstration kit and you'll find out why. No obligation, of course.

EMBECO non-shrink grout

Whether it's generators, large machine tools, hydraulic presses, rolling mills, pulverizers, forging machines, mold shake-outs or other equipment subjected to impact, pounding action or vibration, Embeco will produce a grout that gives long and satisfactory service.

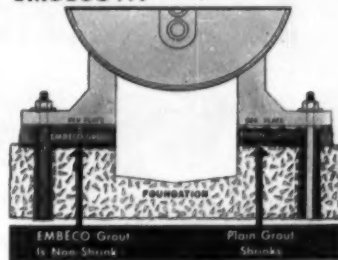
Embeco counteracts shrinkage—principal cause of failure in equipment grouts—also produces easy placeability...sets in 6-12 hours...gives 7-day strength in 24 hours; 50% greater ultimate strength...insures full, level bedplate contact...maintains alignment...provides ductility. *Full information on request.*

MASTERPLATE...



Section of Masterplate Floor.
Note Thickness of Armored Surface

EMBECO...



The **MASTER BUILDERS** *Co*

Subsidiary of American-Marietta Company

C Tournapull moves 100 saturated yards hourly over 2000' of muddy grades

TIMKEN® bearings keep maintenance down

THE regrading of Minnesota State Highway 5 between Victoria and Chanhassen was seriously hampered by a long rainy spell. But mud or no mud, two LeTourneau-Westinghouse Tournapulls were able to load water-soaked clay, loam and sand, haul it over slippery, hilly roads, and complete a 2000' cycle every 5 minutes! The 44 Timken® tapered roller bearings in each Tournapull and attached P19 scraper helped make it possible.

For example, to keep these Tournapulls working in dirt, mud and water, sometimes up to the axles, bearing

seals had to be tight. By holding housings and shafts concentric, Timken bearings maintain effective closures—keep water, dirt and mud out, lubricant in.

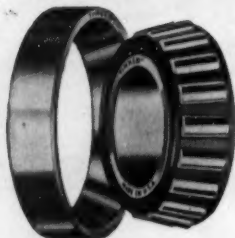
Carrying heavy loads up steep grades puts tremendous thrust loads on the pinion bearings. But Timken bearings handle these thrust loads with ease—as well as all radial loads. That's because the tapered construction of Timken bearings lets them take both radial and thrust loads in any combination. Shafts are held rigid, gears mesh accurately. Wear is reduced.

Gears last longer.

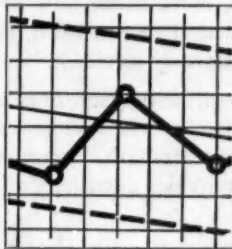
To get steel good enough for Timken bearings, we had to make our own. We're the only U. S. bearing maker that does. Timken bearings give longer life with less friction. Make sure the bearings on your machines are stamped with the trademark "Timken". The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".



This symbol on a product means its bearings are the best.



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TAPERED ROLLER BEARINGS



STATISTICAL QUALITY CONTROL

To insure uniform high quality and closer tolerances, the Timken Company uses statistical quality control. With it, tolerance deviations are plotted graphically. It's one of industry's newest, most scientific methods of improving product uniformity.

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